

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: HELEN PEREIRO Examiner #: 70058 Date: 8/9/01  
Art Unit: 1713 Phone Number 302-1108 Serial Number: 10/663,667  
Mail Box and Bldg/Room Location: Rem 10A29 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See ATTACHED

Inventors (please provide full names): ↓

Earliest Priority Filing Date: 9/30/02

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

A copolymer comprising: alternating copolymer-702  
- olefin unit (i) → see attached P.S.  
- N-phenyl-substituted maleimide (ii') → claim 3

KEY WORDS

optical, birefringence, refractive index,  
transparent/transparency, stretched film/sheet  
(stretch #3), solution-cast/extruded film  
THANKS!

## STAFF USE ONLY

Searcher: K. Farnham

Searcher Phone #: \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Date Searcher Picked Up: \_\_\_\_\_

Date Completed: 8/13/04

Searcher Prep & Review Time: 30

Clerical Prep Time: \_\_\_\_\_

Online Time: 48

PTO.1590 (8-01)

## Type of Search

NA Sequence (#) \_\_\_\_\_

AA Sequence (#) \_\_\_\_\_

Structure (#) 4

Bibliographic \_\_\_\_\_

Litigation \_\_\_\_\_

Fulltext \_\_\_\_\_

Patent Family \_\_\_\_\_

Other \_\_\_\_\_

## Vendors and cost where applicable

STN \_\_\_\_\_

Dialog \_\_\_\_\_

Questel/Orbit \_\_\_\_\_

Dr.Link \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Sequence Systems \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Other (specify) \_\_\_\_\_

subset



# ***STIC Search Report***

**EIC 1700**

**STIC Database Tracking Number: 129456**

**TO: Helen Pezzuto  
Location: REM 10A29  
Art Unit : 1713  
August 13, 2004**

**Case Serial Number: 10/663667**

**From: Kathleen Fuller  
Location: EIC 1700  
REMSSEN 4B28  
Phone: 571/272-2505  
Kathleen.Fuller@uspto.gov**

## **Search Notes**

10/663, 667 (9/30/02)

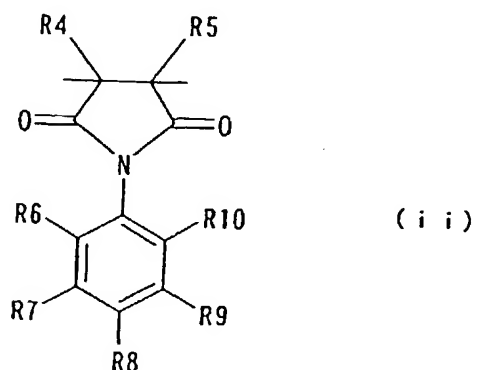
**WHAT IS CLAIMED IS:**

1. A transparent heat-resistant resin optical material comprising a copolymer comprising an olefin residue unit represented by the following formula (i):



wherein R1, R2, and R3 each represents hydrogen or an alkyl group having from 1 to 6 carbon atoms, and

an N-phenyl-substituted maleimide residue unit represented by the following formula (ii):



wherein R4 and R5 each represents hydrogen or a linear or branched alkyl group having from 1 to 8 carbon atoms; R7, R8, and R9 each represents hydrogen, a halogen based element, a carboxylic acid, a carboxylic acid ester, a hydroxyl group, a cyano group, a nitro group, or a linear or branched alkyl group having from 1 to 8 carbon atoms; and R6 and R10 each represents hydrogen, a halogen based element, a carboxylic acid, a carboxylic acid ester, a hydroxyl group, a cyano group, a nitro group, or a linear or

branched alkyl group having from 1 to 8 carbon atoms, and when at least one of R6 or R10 represents hydrogen, the other <sup>2</sup> should not be hydrogen but represent a halogen based element, a carboxylic acid, a carboxylic acid ester, a hydroxyl group, a cyano group, a nitro group, or a linear or branched alkyl group having from 1 to 8 carbon atoms,

the copolymer having a weight average molecular weight, as reduced into standard polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$ , and the transparent heat-resistant resin optical material exhibiting negative birefringence.

2. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the copolymer comprising an olefin residue unit represented by the formula (i) and an N-phenyl-substituted maleimide residue unit represented by the formula (ii) is an alternating copolymer.

3. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the olefin residue unit represented by the formula (i) is a residue unit derived from isobutene; and the N-phenyl-substituted maleimide residue represented by the formula (ii) is a residue unit derived from one or more members selected from the group consisting of N-(2-methylphenyl)maleimide, N-(2,6-diethylphenyl)maleimide, and N-(2,6-diisopropylphenyl)maleimide.

4. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film or a sheet.

5. The transparent heat-resistant resin optical material as claimed in claim 1,

wherein the transparent heat-resistant resin optical material is an optical compensating film.

6. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a retardation film.

7. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film or a sheet prepared by uniaxially or multiaxially stretch molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$  in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature)  $- 20^\circ\text{C}$ ] to [(glass transition temperature)  $+ 30^\circ\text{C}$ ].

8. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film or a sheet prepared by uniaxially or multiaxially stretch molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$  in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature)  $- 20^\circ\text{C}$ ] to [(glass transition temperature)  $+ 20^\circ\text{C}$ ].

9. The transparent heat-resistant resin optical material as claimed in claim 1,

wherein the transparent heat-resistant resin optical material is a retardation film exhibiting negative birefringence and having a relationship of three-dimensional refractive indexes of  $n_z \geq n_y > n_x$  in the case where when the stretching direction is an x-axis within the film plane, the perpendicular direction within the film plane is a y-axis, and the vertical direction outside the film plane is a z-axis,  $n_x$  stands for a refractive index in the x-axis direction,  $n_y$  stands for a refractive index in the y-axis direction, and  $n_z$  stands for a refractive index in the z-axis direction.

10. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film having negative birefringence, which is prepared by molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$  into a film and further uniaxially stretching the copolymer in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature)  $- 20^\circ\text{C}$ ] to [(glass transition temperature)  $+ 30^\circ\text{C}$ ], the film being a retardation film having a relationship of three-dimensional refractive indexes after uniaxial stretching of  $n_z \geq n_y > n_x$  in the case where when the stretching direction is an x-axis within the film plane, the perpendicular direction within the film plane is a y-axis, and the vertical direction outside the film plane is a z-axis,  $n_x$  stands for a refractive index in the x-axis direction,  $n_y$  stands for a refractive index in the y-axis direction, and  $n_z$  stands for a refractive index in the z-axis direction.

11. The transparent heat-resistant resin optical material as claimed in claim 1,

wherein the transparent heat-resistant resin optical material is a retardation film exhibiting negative birefringence and having a relationship of  $n_z > n_y \geq n_x$  or  $n_z > n_x \geq n_y$  in the case where the biaxial stretching directions are an x-axis within the film plane and a y-axis within the film plane, and the vertical direction outside the film plane is a z-axis,  $n_x$  stands for a refractive index in the x-axis direction,  $n_y$  stands for a refractive index in the y-axis direction, and  $n_z$  stands for a refractive index in the z-axis direction.

12. The transparent heat-resistant resin optical material as claimed in claim 1, wherein the transparent heat-resistant resin optical material is a film having negative birefringence, which is prepared by molding a copolymer comprising the olefin residue unit represented by the formula (i) and the N-phenyl-substituted maleimide residue unit represented by the formula (ii) and having a weight average molecular weight, as reduced into standard polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$  into a film and further biaxially stretching the copolymer in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature)  $- 20^\circ\text{C}$ ] to [(glass transition temperature)  $+ 30^\circ\text{C}$ ], the film being a retardation film having a relationship of three-dimensional refractive indexes after biaxial stretching of  $n_z > n_y \geq n_x$  or  $n_z > n_x \geq n_y$  in the case where the biaxial stretching directions are an x-axis within the film plane and a y-axis within the film plane, and the vertical direction outside the film plane is a z-axis,  $n_x$  stands for a refractive index in the x-axis direction,  $n_y$  stands for a refractive index in the y-axis direction, and  $n_z$  stands for a refractive index in the z-axis direction.

13. The transparent heat-resistant resin optical material as claimed in claim 10, wherein the transparent heat-resistant resin optical material is a retardation film prepared by uniaxially stretching the copolymer in the temperature range, based on a glass

transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 20°C].

14. The transparent heat-resistant resin optical material as claimed in claim 12, wherein the transparent heat-resistant resin optical material is a retardation film prepared by biaxially stretching the copolymer in the temperature range, based on a glass transition temperature of the copolymer, of from [(glass transition temperature) – 20°C] to [(glass transition temperature) + 20°C].

15. The transparent heat-resistant resin optical material as claimed in claim 10, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

16. The transparent heat-resistant resin optical material as claimed in claim 12, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

17. The transparent heat-resistant resin optical material as claimed in claim 13, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.

18. The transparent heat-resistant resin optical material as claimed in claim 14, wherein the transparent heat-resistant resin optical material is a film in which the copolymer film before stretching is prepared by solution casting or extrusion molding.



- (2CD)
19. An optical compensating member for liquid crystal display element,  
comprising using the transparent heat-resistant resin optical material as claimed in claim  
1.

polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$ .

In the formula (i) as the constitutional unit of the copolymer to be used in the invention, R1, R2, and R3 each represents hydrogen or an alkyl group having from 1 to 6 carbon atoms. Examples of the alkyl group having from 1 to 6 carbon atoms include a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, a sec-butyl group, a tert-butyl group, a pentyl group, a hexyl group, a cyclopropyl group, a cyclobutyl group, and a cyclohexyl group. Here, in the case where the number of carbon atoms of the alkyl group exceeds 6, the copolymer may possibly be lowered in heat resistance or crystallized, resulting in deterioration in transparency.

(i) Examples of olefins from which is derived the olefin residue unit represented by the formula (i) include isobutene, 2-methyl-1-butene, 2-methyl-1-pentene, 2-methyl-1-hexene, 2-methyl-1-heptene, 1-isooctene, 2-methyl-1-octene, 2-ethyl-1-pentene, 2-methyl-2-pentene, 2-methyl-2-hexene, ethylene, propylene, 1-butene, and 1-hexene. Above all, 1,2-di-substituted olefins, especially isobutene, are preferable because they can provide copolymers having excellent heat resistance and mechanical characteristics. The olefins may be used alone or in combination of two or more thereof, but the ratio thereof is not restricted.

In the formula (ii) as the constitutional unit of the copolymer to be used in the invention, R4 and R5 each represents hydrogen or a linear or branched alkyl group having from 1 to 8 carbon atoms. Examples of the alkyl group having from 1 to 8 carbon atoms include a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, a sec-butyl group, a tert-butyl group, a pentyl group, a hexyl group, an octyl group, a cyclopropyl group, a cyclobutyl group, and a cyclohexyl group. In the case where the number of carbon atoms of the linear or branched alkyl group exceeds 8, the copolymer may possibly be deteriorated in heat resistance or cause partial

the number of carbon atoms of the linear or branched alkyl group exceeds 8, the copolymer may possibly be deteriorated in heat resistance or cause partial crystallization.

In the case where R6 and R10 each represents hydrogen, i.e., in the case where no substituent is present at the ortho-positions of phenyl, the resulting copolymer has a low Abbe number. Optical materials obtained from such a copolymer do not exhibit negative birefringence.

(ii) As N-phenyl-substituted maleimides from which the N-phenyl-substituted maleimide residue unit represented by the formula (ii) is derived, can be used N-phenyl-substituted maleimides in which a specific substituent is present at the ortho-position(s) as an N-substituent of the maleimide compound. Examples include

N-(2-methylphenyl)maleimide,	N-(2-ethylphenyl)maleimide,	
N-(2-n-propylphenyl)maleimide,	N-(2-isopropylphenyl)maleimide,	
N-(2-n-butylphenyl)maleimide,	N-(2-sec-butylphenyl)maleimide,	
N-(2-tert-butylphenyl)maleimide,	N-(2-n-pentylphenyl)maleimide,	
N-(2-tert-pentylphenyl)maleimide,	N-(2,6-dimethylphenyl)maleimide,	
N-(2,6-diethylphenyl)maleimide,	N-(2,6-di-n-propylphenyl)maleimide,	
N-(2,6-diisopropylphenyl)maleimide,	N-(2-methyl-6-ethylphenyl)maleimide,	
N-(2-methyl-6-isopropylphenyl)maleimide,	N-(2-chlorophenyl)maleimide,	
N-(2-bromophenyl)maleimide,	N-(2,6-dichlorophenyl)maleimide,	
N-(2,6-dibromophenyl)maleimide,	N-(2-biphenyl)maleimide,	
N-(2-diphenylether)maleimide,	N-(2-cyanophenyl)maleimide,	and

N-(2-nitrophenyl)maleimide. These compounds may be used alone or in combination of two or more thereof, but the ratio thereof is not restricted. Above all, one or more N-phenyl-substituted maleimides selected from the group consisting of

N-(2-methylphenyl)maleimide, N-(2,6-dimethylphenyl)maleimide, N-(2,6-diethylphenyl)maleimide, and N-(2,6-diisopropylphenyl)maleimide are especially preferable because transparent heat-resistant resin optical materials having excellent heat resistance and mechanical properties and exhibiting relatively high negative birefringence are obtained.

(i i)

With respect to the substituent to be introduced into the phenyl group in the formula (ii), it is important to utilize those in which a specific substituent is introduced at the ortho-position(s) from the viewpoint of the desired optical function. In addition, other substituents may be introduced at the meta-position(s) and/or the para-position. Examples of such N-phenyl-substituted maleimides include N-(2,4,6-trimethylphenyl)maleimide, N-(2,4-dimethylphenyl)maleimide, N-(perbromophenyl)maleimide, N-(2-methyl-4-hydroxyphenyl)maleimide, and N-(2,6-diethyl-4-hydroxyphenyl)maleimide.

The copolymer that is used in the transparent heat-resistant resin optical material of the invention has a weight average molecular weight, as reduced into standard polystyrene, of from  $5 \times 10^3$  to  $5 \times 10^6$ . In the case of copolymers having a weight average molecular weight exceeding  $5 \times 10^6$ , it is difficult to mold them as optical materials. On the other hand, in the case of copolymers having a weight average molecular weight of less than  $5 \times 10^3$ , the resulting copolymers are very brittle so that it is difficult to use them as optical materials. Incidentally, the weight average molecular weight can be obtained by measuring an elution curve of the copolymer by gel permeation chromatography (hereinafter referred to as "GPC") as reduced into standard polystyrene.

The copolymer to be used in the invention is especially preferably an alternating copolymer in which the olefin residue unit represented by the formula (i) and the

=> FILE REG

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DICTIONARY FILE UPDATES: 11 AUG 2004 HIGHEST RN 725685-10-9

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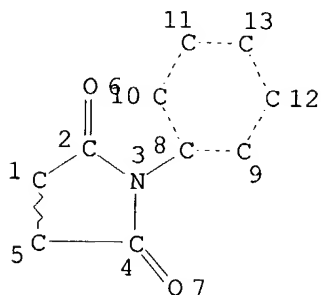
FILE LAST UPDATED: 11 Aug 2004 (20040811/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE

L7 STR

*structure 1*



NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RSPEC I  
 NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE  
 L8 STR 2

CH=C  
 1 2

*4,264 polymers from  
 structure 1 and 2*

NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE

L9 SCR 2043  
 L11 4264 SEA FILE=REGISTRY SSS FUL L7 AND L8 AND L9  
 L14 93 SEA FILE=HCAPLUS ABB=ON L11(L) TRANSPAR?  
 L15 21 SEA FILE=HCAPLUS ABB=ON L14(L) OPTIC?  
 L16 685 SEA FILE=REGISTRY ABB=ON L11 AND 2/NR  
 L17 672 SEA FILE=HCAPLUS ABB=ON L16  
 L18 9 SEA FILE=HCAPLUS ABB=ON L15 AND L17  
 L19 STR

CH-Ak  
@5 6

*Subatt search*

Ak--C--Ak G1--CH=G2  
7 @8 9 3 1 2

Ak @4

VAR G1=H/4  
VAR G2=CH2/5/8  
NODE ATTRIBUTES:  
CONNECT IS E1 RC AT 4  
CONNECT IS E1 RC AT 6  
CONNECT IS E1 RC AT 7  
CONNECT IS E1 RC AT 9  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
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NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE  
L21 3360 SEA FILE=REGISTRY SUB=L11 SSS FUL L19  
L22 484 SEA FILE=REGISTRY ABB=ON L21 AND 2/NR  
L23 412 SEA FILE=HCAPLUS ABB=ON L22  
L24 249 SEA FILE=HCAPLUS ABB=ON L23(L) (PREP OR IMF OR SPN)/RL  
L25 12 SEA FILE=HCAPLUS ABB=ON L24 AND TRANSPAR?  
L26 9 SEA FILE=HCAPLUS ABB=ON L24 AND OPTIC?  
L27 1 SEA FILE=HCAPLUS ABB=ON L24 AND BIREFRING?  
L28 20 SEA FILE=HCAPLUS ABB=ON (L25 OR L26 OR L27)  
L29 28 SEA FILE=HCAPLUS ABB=ON L18 OR L28

=> D L29 ALL 1-28 HITSTR

*28 CA references  
with utility*

L29 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2004:512635 HCAPLUS  
DN 141:79433  
ED Entered STN: 25 Jun 2004  
TI Photo- and heat-curable polymer compositions, their use as color filters,  
and liquid crystal displays  
IN Kaneko, Tomomasa; Ueda, Kenichi  
PA Nippon Shokubai Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 19 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM G03F007-004

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

ICS C08F290-00; G02B005-20; G02F001-1333; G02F001-1335; G02F001-1339;  
G03F007-027; G03F007-033  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)  
Section cross-reference(s): 38

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004177498	A2	20040624	JP 2002-341066	20021125
PRAI JP 2002-341066		20021125		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004177498	ICM	G03F007-004
	ICS	C08F290-00; G02B005-20; G02F001-1333; G02F001-1335; G02F001-1339; G03F007-027; G03F007-033
JP 2004177498	FTERM	2H025/AB13; 2H025/AC01; 2H025/AD01; 2H025/BC32; 2H025/BC42; 2H025/CA27; 2H025/CA28; 2H025/CB10; 2H025/CB13; 2H025/CB14; 2H025/CB41; 2H025/CB43; 2H025/CB52; 2H025/CC20; 2H025/FA03; 2H025/FA17; 2H025/FA29; 2H048/BA11; 2H048/BA45; 2H048/BA48; 2H048/BB07; 2H048/BB08; 2H089/LA09; 2H089/LA11; 2H089/MA04; 2H089/NA14; 2H089/PA06; 2H089/PA07; 2H089/QA06; 2H089/QA14; 2H089/TA05; 2H089/TA09; 2H089/TA12; 2H090/HB13X; 2H090/HC05; 2H090/HD06; 2H090/LA02; 2H090/LA15; 2H091/FA04Y; 2H091/FA35Y; 2H091/FB04; 2H091/FC23; 2H091/FD04; 2H091/GA08; 2H091/GA16; 2H091/LA04; 4J027/AA02; 4J027/AJ01; 4J027/AJ05; 4J027/BA20; 4J027/BA21; 4J027/BA24; 4J027/BA26; 4J027/BA28; 4J027/CB10; 4J027/CC03; 4J027/CD10

- AB The compns. comprise (A) binder resins containing carboxyl groups and/or ester groups, (B) radically polymerizable monomers, (C) photopolymn. initiators, (D) esterification catalysts and/or ester exchanger catalysts, and (X) compds. having  $\geq 2$  OH groups or having  $\geq 1$  OH group(s) and  $\geq 1$  radically polymerizable double bond(s). Color filters made of the compns. and liquid crystal displays comprising the color filters are also claimed. The color filters prepared from the compns. have high hardness and heat resistance.
- ST photocurable heat curable polymer compn color filter; color filter LCD acrylic light heat curable polymer
- IT Liquid crystal displays  
Optical filters  
(heat- and photocurable polymer compns. for color filters in liquid crystal displays)
- IT Photoimaging materials  
(photo- and heat-curable; heat- and photocurable polymer compns. for color filters in liquid crystal displays)
- IT 13963-57-0, Aluminum tris(acetylacetonate)  
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)  
(ester exchange catalyst; heat- and photocurable polymer compns. for color filters in liquid crystal displays)
- IT 709631-64-1P, Dipentaerythritol pentaacrylate-methacrylic acid-methyl methacrylate-trimethylolpropane copolymer 709631-65-2P, Cyclohexyl methacrylate-dipentaerythritol pentaacrylate-2-ethylhexyl methacrylate-methacrylic acid-methyl methacrylate copolymer  
709632-22-4P  
RL: DEV (Device component use); IMF (Industrial manufacture);

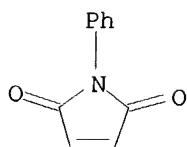




CRN 108602-53-5  
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 CCI PMS

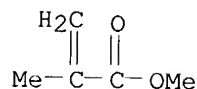
CM 5

CRN 941-69-5  
 CMF C10 H7 N O2



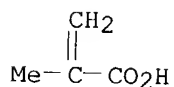
CM 6

CRN 80-62-6  
 CMF C5 H8 O2



CM 7

CRN 79-41-4  
 CMF C4 H6 O2



L29 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2004:261018 HCAPLUS  
 DN 140:271731  
 ED Entered STN: 31 Mar 2004  
 TI **Transparent** heat-resistant resin **optical** material and  
 film  
 IN Toyomasu, Shinsuke; Ikai, Yojiro  
 PA Tosoh Corporation, Japan  
 SO Eur. Pat. Appl., 20 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC ICM C08F222-40  
 ICS G02B001-04; G02B005-30  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 38

*Applicants*

## FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1403297	A1	20040331	EP 2003-20558	20030917
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 2004063887	A1	20040401	US 2003-663667	20030917
PRAI	JP 2002-286212	A	20020930		
	JP 2003-8138	A	20030116		
	JP 2003-8139	A	20030116		
	JP 2003-204632	A	20030731		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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EP 1403297	ICM	C08F222-40
	ICS	G02B001-04; G02B005-30
EP 1403297	ECLA	G02B001/04; G02B005/30R

AB A **transparent** heat-resistant resin **optical** materials having excellent heat resistance and dynamic characteristics, having neg. **birefringence** and exhibiting a high refractive index and a high Abbe number, especially **optical** compensating members such as films, sheets and retardation films for LCD display element. The **transparent** heat-resistant resin **optical** material is made of a copolymer containing a specific olefin residue unit and a specific N-phenyl-substituted maleimide residue unit and having a weight-average mol. weight

5 + 103 to 5 + 106, and exhibiting neg. **birefringence**. An N-(2-methylphenyl)maleimide-isobutene alternating copolymer film was dried at 100° for 4 h, 120-160° (raising the temperature 10°) over 1 h, and in vacuo at 180° for 4 h. The dried film had a light transmittance 92%, haze 0.3%, refractive index 1.57, an Abbe number 37, a retardation amount of 0 nm, and a Tg 206°. After stretching, the film had neg. **birefringence** and a retardation amount [Re = (nx - ny)d; d thickness] -125 nm/100 pm of the stretched film thickness.

ST alkylmaleimide isobutene alternating copolymer heat resistant **optical** film

IT Liquid crystal displays  
(compensating member; **transparent** heat-resistant resin **optical** material film for display device)

IT **Transparent** materials  
(heat-resistant; **transparent** heat-resistant resin **optical** material film for display device)

IT **Optical** films  
(**transparent** heat-resistant resin **optical** material film for display device)

IT Heat-resistant materials  
(**transparent**; **transparent** heat-resistant resin **optical** material film for display device)

IT 180463-25-6P, N-(2,6-Diethylphenyl)maleimide-isobutene alternating copolymer 180463-27-8P, N-(2-Methylphenyl)maleimide-isobutene alternating copolymer 674294-15-6P, N-(2,6-Diisopropylphenyl)maleimide-isobutene alternating copolymer  
RL: IMF (**Industrial manufacture**); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PREP (**Preparation**); PROC (Process); USES (Uses)  
(**transparent** heat-resistant resin **optical** material film for display device)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Eric, N; US 3352832 A 1967
- (2) Hayashi, M; WO 03100480 A 2003 HCAPLUS
- (3) Kanegafuchi Chemical Ind; EP 1160591 A 2001 HCAPLUS
- (4) Suzuki, M; WO 9730119 A 1997 HCAPLUS
- (5) Tosoh Corp; EP 0463612 B 1992 HCAPLUS
- (6) Tosoh Corp; JP 05117334 A 1993 HCAPLUS

IT **180463-25-6P**, N-(2,6-Diethylphenyl)maleimide-isobutene alternating copolymer **180463-27-8P**, N-(2-Methylphenyl)maleimide-isobutene alternating copolymer **674294-15-6P**, N-(2,6-Diisopropylphenyl)maleimide-isobutene alternating copolymer  
RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)  
(**transparent** heat-resistant resin **optical** material film for display device)

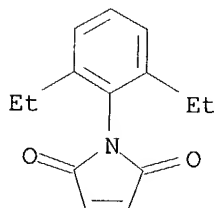
RN 180463-25-6 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with 2-methyl-1-propene, alternating (9CI) (CA INDEX NAME)

CM 1

CRN 38167-72-5

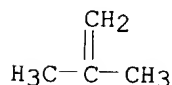
CMF C14 H15 N O2



CM 2

CRN 115-11-7

CMF C4 H8



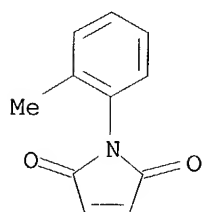
RN 180463-27-8 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene, alternating (9CI) (CA INDEX NAME)

CM 1

CRN 4067-01-0

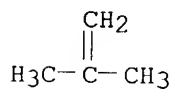
CMF C11 H9 N O2



CM 2

CRN 115-11-7

CMF C4 H8



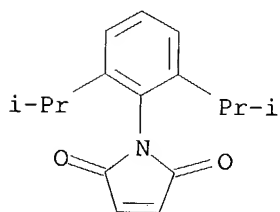
RN 674294-15-6 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-[2,6-bis(1-methylethyl)phenyl]-, polymer with 2-methyl-1-propene, alternating (9CI) (CA INDEX NAME)

CM 1

CRN 56746-12-4

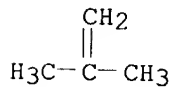
CMF C16 H19 N O2



CM 2

CRN 115-11-7

CMF C4 H8



L29 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2002:903870 HCAPLUS  
DN 138:369262

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

ED Entered STN: 29 Nov 2002

TI High-performance polymer waveguide devices via low-cost direct photolithography process

AU Wang, Jianguo; Shustack, Paul J.; Garner, Sean M.

CS Sci. Technol. Div., Corning Inc., Corning, NY, 14831, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (2002), 4904(Optical Fiber and Planar Waveguide Technology II), 129-138  
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 36, 73

AB The design and development of photoresist-like highly fluorinated maleimide copolymers and waveguide fabrication and **optical** testing are described. A series of thermally stable, ( $T_g > 150^\circ$ ,  $T_d > 300^\circ$ ) highly fluorinated (50%) maleimide copolymers were prepared by radical polymerization of halogenated maleimides with various halogenated comonomers. A theor. correlation between **optical** loss and copolymer structure was quant. established from C-H bond overtone anal. This correlation was developed through design and manipulation of the copolymer structure by changing the primary properties such as mol. weight, copolymer composition, copolymer sequence distribution, and variations of the side chain including photochem. functionalized side units. Various characterization methods were used such as ( $^1H$ ,  $^{13}C$ ,  $^{19}F$ ) NMR, UV-NIR, FTIR, GPC, etc. The copolymers exhibit excellent solubility in ketone solvents and high quality thin films can be prepared by spin coating. The polymer films have a refractive index of 1.42-1.67 and **optical** loss of 0.2 to 0.4 dB/cm at 1550 nm depending on the composition as extrapolated from UV-NIR spectra. When glycidyl methacrylate is incorporated into the polymer backbone, the material behaves like a neg. photoresist with the addition of cationic photoinitiator. The final crosslinked polymers show excellent **optical** and thermal properties. The photolithog. processing of the highly fluorinated copolymer material was examined in detail using in-situ FTIR. The influence of various polymer structural parameters on the photosensitivity and photo contrast of the polymer was evaluated in detail. The same polymeric material was tested using hot micro-embossing and E-beam lithog. to fabricate channel waveguides and other microstructures. The versatility of this unique photocrosslinkable thermoplastic material for various passive and active **optical** components is discussed in detail.

ST fluorinated maleimide pentafluorophenylmaleimide fluoropolymer prepolymer; refractive index **optical** loss maleimide copolymer fluorinated maleimide; electron beam lithog micro embossing fluorinated maleimide copolymer; waveguide fabrication electron beam lithog embossing fluoropolymer

IT Polyimides, preparation  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (acrylic, fluorine-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

IT Fluoropolymers, preparation  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (acrylic, maleimide-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct

- photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT **Optical** instruments  
(attenuators; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT **Optical** waveguides  
(channel and splitters and thermal switches; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Embossing  
(e-beam; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT **Optical** waveguides  
(fiber, low-loss; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Acrylic polymers, preparation  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(fluorine-containing, maleimide-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Acrylic polymers, preparation  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
(polyimide-, fluorine-containing; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Electron beams  
Glass transition temperature  
Negative photoresists  
Photolithography  
Refractive index  
Thermal stability  
(preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Polymerization  
(radical; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Polymer chains  
(sequence distribution; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT Polymer chains  
(side; preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)
- IT 106-91-2DP, Glycidyl methacrylate, polymers with fluorinated maleimides and acrylic monomers 541-59-3DP, Maleimide, fluorinated, polymers with acrylic monomers and fluorophenylstyrene 59726-65-7DP, N-Pentafluorophenyl maleimide, polymers with fluorinated maleimides and acrylic monomers 342424-50-4P **342424-51-5P** 423119-96-4P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)

(preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Chalk, J; PCT Int Appl WO 0236647 2002
- (2) Elada, L; SPIE Critical Reviews 1997, VCR68, P207
- (3) He, M; SPIE Proceedings 2002, V4918-33
- (4) Ishigure, T; J Lightwave Technol 2000, V18, P178 HCAPLUS
- (5) Kim, J; Macromolecules 2001, V34, P7817 HCAPLUS
- (6) Kobayashi, J; Journal of Lightwave Technology 1998, V16, P1024 HCAPLUS
- (7) Matsumoto, A; Macromolecules 1990, V23, P4508 HCAPLUS
- (8) Norwood, R; Proceedings OSA Organic Thin Films for Photonics Applications 1997, P161
- (9) Ober, C; US 6379874 2002 HCAPLUS
- (10) Pitois, C; Macromolecules 1999, V32, P2903 HCAPLUS
- (11) Shah, H; Polymer Preprints 1999, V40(2), P1293 HCAPLUS
- (12) Wang, J; US 6314225 2001 HCAPLUS
- (13) Wang, J; Macromolecules 1997, V30, P1906 HCAPLUS
- (14) Yao, H; Proceedings of SPIE 2001, V4439, P36 HCAPLUS

IT **342424-51-5P**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)

(preparation and refractive index and **optical** loss of maleimide fluoro-acrylic polymers and direct photolithog. and e-beam micro-embossing for fabrication of waveguides)

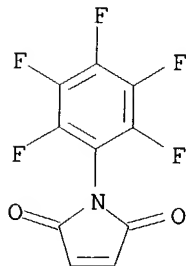
RN 342424-51-5 HCAPLUS

CN 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl ester, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 59726-65-7

CMF C10 H2 F5 N O2

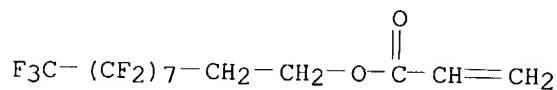


CM 2

CRN 27905-45-9



CMF C13 H7 F17 O2



L29 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2001:450937 HCAPLUS  
 DN 135:46992  
 ED Entered STN: 22 Jun 2001  
 TI Preparation of transparent heat-resistant maleimide and methacrylic copolymers  
 IN Ueda, Kenichi; Makino, Tomomi; Yamaguchi, Minoru  
 PA Nippon Shokubai Co., Ltd., Japan  
 SO Eur. Pat. Appl., 15 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC ICM C08F220-12  
 ICS C08F222-40  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 38, 73  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1108731	A2	20010620	EP 2000-127078	20001211
	EP 1108731	A3	20010905		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6417306	B1	20020709	US 2000-722344	20001128
	JP 2001233919	A2	20010828	JP 2000-379391	20001213
PRAI	JP 1999-353622	A	19991213		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1108731	ICM	C08F220-12
	ICS	C08F222-40

AB The polymer having a small amount of residual maleimide monomer and maleimide monomer generated by heating in mold processing, good transparency and heat resistance, and reduced discoloration, is prepared by polymerizing monomers containing a maleimide monomer (e.g., N-phenylmaleimide) and a methacrylic acid ester monomer (e.g., Me methacrylate) wherein an acidic substance(e.g., di-Me phosphite) is made to exist with a sulfur chain-transfer agent (e.g., n-dodecylmercaptan) in the polymerization system. The polymer, useful for optical and automobile materials, has residual maleimide monomer content  $\leq 10X$  ppm (X = amount of a structural unit derived from the maleimide monomer) and maleimide monomer content (generated by heating the polymer at 240° for 10 min)  $\leq 10X$  ppm.

ST heat resistance maleimide methacrylate polymer optical; maleimide methacrylate polymer prepn transparency

IT Transparent materials  
 (heat-resistant; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)

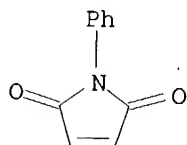
IT Automobiles

- (parts; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)
- IT Discoloration prevention  
Optical materials  
(preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)
- IT Heat-resistant materials  
(transparent; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)
- IT 112-55-0, n-Dodecyl mercaptan 25103-58-6, tert-Dodecyl mercaptan  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(chain-transfer agent; preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)
- IT 32554-23-7P, Methyl methacrylate-N-phenylmaleimide copolymer  
81598-70-1P, Methyl methacrylate-N-phenylmaleimide-styrene copolymer 105469-99-6P, Methyl methacrylate-N-cyclohexylmaleimide copolymer 109636-51-3P, N-Cyclohexylmaleimide-methyl methacrylate-styrene copolymer  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of **transparent** heat-resistant maleimide and methacrylic copolymers for **optical** and automobile materials)
- IT 64-19-7, Acetic acid, uses 108-24-7, Acetic anhydride 298-07-7  
868-85-9, Dimethyl phosphite 1571-33-1, Phenylphosphonic acid 6303-21-5D, Phosphinic acid, derivs. 13598-36-2D, Phosphonic acid, derivs. 25756-87-0D, Phosphinous acid, derivs.  
RL: MOA (Modifier or additive use); USES (Uses)  
(preparation of transparent heat-resistant maleimide and methacrylic copolymers for optical and automobile materials)
- IT 32554-23-7P, Methyl methacrylate-N-phenylmaleimide copolymer  
81598-70-1P, Methyl methacrylate-N-phenylmaleimide-styrene copolymer  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of **transparent** heat-resistant maleimide and methacrylic copolymers for **optical** and automobile materials)
- RN 32554-23-7 HCAPLUS
- CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

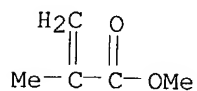
CMF C10 H7 N O2



CM 2

CRN 80-62-6

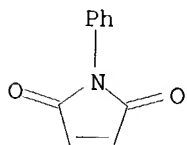
CMF C5 H8 O2



RN 81598-70-1 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

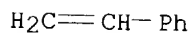
CM 1

CRN 941-69-5  
CMF C10 H7 N O2



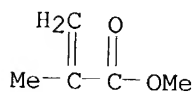
CM 2

CRN 100-42-5  
CMF C8 H8



CM 3

CRN 80-62-6  
CMF C5 H8 O2



L29 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2001:396943 HCAPLUS  
DN 135:6011  
ED Entered STN: 01 Jun 2001  
TI N-halogenated maleimide copolymers and **optical** materials thereof  
IN Wang, Jianguo  
PA Corning Incorporated, USA  
SO PCT Int. Appl., 44 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
IC ICM C08F214-00  
ICS C08F214-02; C08F214-18; G02B006-10; G02B006-24

CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001038411	A1	20010531	WO 2000-US29532	20001026
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6314225	B1	20011106	US 1999-448839	19991123
	TW 491858	B	20020621	TW 2000-89125100	20001123
PRAI	US 1999-448839	A	19991123		

CLASS

	PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
	WO 2001038411	ICM	C08F214-00
		ICS	C08F214-02; C08F214-18; G02B006-10; G02B006-24
AB	A copolymer containing N-halogenated Ph maleimide units or N-halogenated Ph bismaleimide units and one or more second units selected from halogenated acrylates, halogenated styrenes, halogenated vinyl ether, halogenated olefins, halogenated vinyl isocyanates, halogenated N-vinyl amides, halogenated allyls, halogenated propenyl ethers, halogenated methacrylates, halogenated maleates, halogenated itaconates, and halogenated crotonates, is useful in <b>optical</b> devices such as <b>optical</b> fibers. A polymer was prepared from pentafluoro styrene and pentafluorophenyl maleimide.		
ST	halogenated maleimide copolymer <b>optical</b> device		
IT	<b>Optical</b> fibers <b>Optical</b> instruments Waveguides (N-halogenated maleimide copolymers and <b>optical</b> materials thereof)		
IT	342424-50-4P	342424-51-5P	342424-52-6P
	342424-53-7P	342424-54-8P	
	RL: IMF ( <b>Industrial manufacture</b> ); PRP ( <b>Properties</b> ); TEM (Technical or engineered material use); PREP ( <b>Preparation</b> ); USES (Uses) (N-halogenated maleimide copolymers and <b>optical</b> materials thereof)		
IT	59726-64-6P, N-Pentafluorophenylmaleamic acid	59726-65-7P, N-Pentafluorophenylmaleimide	
	RL: IMF ( <b>Industrial manufacture</b> ); RCT ( <b>Reactant</b> ); PREP ( <b>Preparation</b> ); RACT (Reactant or reagent) (N-halogenated maleimide copolymers and <b>optical</b> materials thereof)		
IT	108-31-6, Maleic anhydride, reactions	771-60-8, Pentafluoro aniline	
	RL: RCT ( <b>Reactant</b> ); RACT ( <b>Reactant or reagent</b> ) (N-halogenated maleimide copolymers and <b>optical</b> materials thereof)		

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Buchanan; US 5122613 A 1992 HCAPLUS
- (2) El-Guweri; Macromol Chem Phys 1997, V198(2), P401 HCAPLUS
- (3) Eldada; Critical Reviews 1997, VCR68, P207 HCAPLUS

- (4) Hagiwara; Macromol Rapid Chem Commun 1997, V19(4), P303
- (5) Hendlinger; Langmuir 1997, V13(2), P310 HCAPLUS
- (6) Liu; Polymer Degradation and Stability 1998, V61, P21 HCAPLUS
- (7) Nield; US 3666720 A 1972 HCAPLUS

IT 342424-51-5P 342424-52-6P 342424-53-7P  
342424-54-8P

RL: IMF (Industrial manufacture); PRP (Properties); TEM  
(Technical or engineered material use); PREP (Preparation); USES  
(Uses)  
(N-halogenated maleimide copolymers and optical materials thereof)

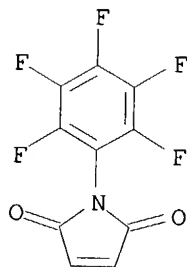
RN 342424-51-5 HCAPLUS

CN 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl ester, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 59726-65-7

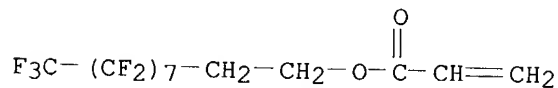
CMF C10 H2 F5 N O2



CM 2

CRN 27905-45-9

CMF C13 H7 F17 O2



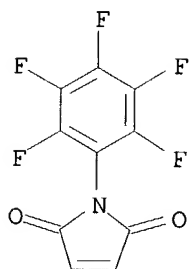
RN 342424-52-6 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-(pentafluorophenyl)-, polymer with (2-chloroethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

CRN 59726-65-7

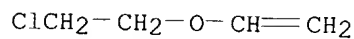
CMF C10 H2 F5 N O2



CM 2

CRN 110-75-8

CMF C4 H7 Cl O



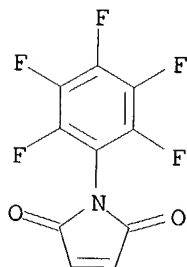
RN 342424-53-7 HCAPLUS

CN 1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptafluoro-N-methyl-N-[2-(vinylloxy)ethyl]-, polymer with 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 59726-65-7

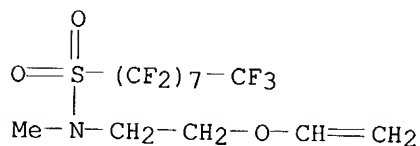
CMF C10 H2 F5 N O2



CM 2

CRN 26686-94-2

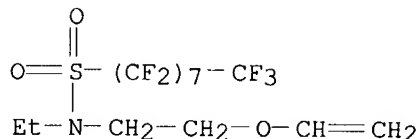
CMF C13 H10 F17 N O3 S



RN 342424-54-8 HCAPLUS  
 CN 1-Octanesulfonamide, N-[2-(ethenyloxy)ethyl]-N-ethyl-  
 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, polymer with  
 1-(pentafluorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

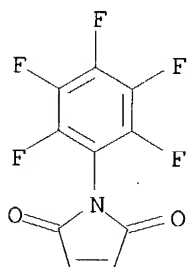
CM 1

CRN 92415-95-7  
 CMF C14 H12 F17 N O3 S



CM 2

CRN 59726-65-7  
 CMF C10 H2 F5 N O2



L29 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:688709 HCAPLUS  
 DN 133:363356  
 ED Entered STN: 01 Oct 2000  
 TI Design and Demonstration of Hybrid Multilayer Structures: Layer-by-Layer  
 Mixed Covalent and Ionic Interlayer Linking Chemistry  
 AU Kohli, P.; Blanchard, G. J.  
 CS Department of Chemistry, Department of Chemistry, East Lansing, MI,  
 48824-1322, USA  
 SO Langmuir (2000), 16(22), 8518-8524  
 CODEN: LANGD5; ISSN: 0743-7463  
 PB American Chemical Society  
 DT Journal  
 LA English  
 CC 37-6 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 35, 56  
 AB We report on the growth of layered mol. assemblies where the interlayer  
 attachment chemical is controlled layer-by-layer. We demonstrate the  
 compatibility of chemical where the layers are connected by ionic  
 coordination chemical [ROPO32--Zr4+--O2CR]+OH- and by the formation of

- covalent urea moieties. A maleimide-vinyl ether (MVE) copolymer containing pendant benzoic acid and Bu alc. functionalities is used for ionic layer growth. Coupling of covalently bonded layers to the MVE polymer is achieved by the attachment of poly(ethylene imine), PEI, to the MVE surface. Subsequent reaction of the PEI surface with diisocyanates and diamines produces urea-linked covalent multilayers. The covalent multilayers can be converted to ionic growth chemical by treatment of the aminated terminal surface with  $\text{POCl}_3$  and water followed by further reaction with MVE polymer and  $\text{Zr}^{4+}$  ions. We report the reaction schemes for these hybrid layer structures and the characterization of these novel materials by **optical ellipsometry**, FTIR and UV-vis spectroscopy, XPS, and X-ray diffraction. The data show the formation of robust multilayer assemblies characterized by limited order within each layer.
- ST multilayer structure covalent ionic hybrid prep; crystal structure ellipsometry hybrid multilayer structure; polyurea maleimide vinyl ether copolymer layer; zirconium phosphate ionic multilayer polyurea hybrid structure
- IT Hybrid organic-inorganic materials  
Multilayers  
(design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- IT Crystal structure  
Ellipsometry  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- IT Polyureas  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- IT 7440-21-3, Silicon, miscellaneous 7440-32-6, Titanium, miscellaneous  
7440-57-5, Gold, miscellaneous  
RL: MSC (Miscellaneous)  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- IT 1633-78-9, 6-Mercapto-1-hexanol 10025-87-3, Phosphorus oxychloride  
29611-84-5, Collidine  
RL: NUU (Other use, unclassified); USES (Uses)  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- IT 101-68-8DP, 4,4'-Methylenediphenylisocyanate, polyurea derivative  
**307930-24-1P**, N-(4-Carboxyphenyl)maleimide-4-vinyl butanol  
alternating copolymer  
RL: PRP (Properties); **SPN (Synthetic preparation); PREP (Preparation)**  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- IT 101-77-9 108-31-6, Maleic anhydride, reactions 150-13-0,  
4-Aminobenzoic acid  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)
- RE.CNT 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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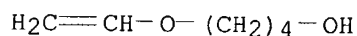
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- IT **307930-24-1P**, N-(4-Carboxyphenyl)maleimide-4-vinyloxy butanol  
alternating copolymer  
RL: PRP (Properties); **SPN (Synthetic preparation); PREP**  
**(Preparation)**  
(in design and demonstration of hybrid multilayer structures:  
layer-by-layer mixed covalent and ionic interlayer linking chemical)

RN 307930-24-1 HCAPLUS  
 CN Benzoic acid, 4-(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-, polymer with  
 4-(ethenyloxy)-1-butanol, alternating (9CI) (CA INDEX NAME)

CM 1

CRN 17832-28-9

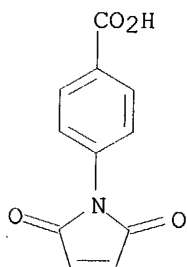
CMF C6 H12 O2



CM 2

CRN 17057-04-4

CMF C11 H7 N O4



L29 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:631908 HCAPLUS

DN 133:208342

ED Entered STN: 12 Sep 2000

TI Manufacture of thermoplastic polymers with low content of unreacted  
 monomers, and maleimide polymers

IN Ueda, Kenichi; Yamaguchi, Minoru; Fujioka, Kazuchika

PA Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08F002-44

ICS C08F222-06; C08F222-40

CC 35-4 (Chemistry of Synthetic High Polymers)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000248010	A2	20000912	JP 1999-50485	19990226
PRAI	JP 1999-50485		19990226		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000248010	ICM	C08F002-44
	ICS	C08F222-06; C08F222-40

AB The polymers are manufactured by polymerization of monomers containing

$\alpha,\beta$ -unsatd. dicarboxylic acids or their derivs. while adding dienes and/or their precursors. A solution containing 49:13:38 styrene-acrylonitrile-N-phenylmaleimide copolymer and 180 ppm N-phenylmaleimide (I) was reacted with cyclopentadiene and extruded to give pellets containing 8 ppm I and 90 ppm Diels-Alder adduct. A test piece manufactured from the pellets showed deflection temperature under load 151° and total light transmittance 89%.

ST styrene acrylonitrile phenylmaleimide copolymer manuf cyclopentadiene; thermoplastic manuf reduced unreacted monomer content; heat resistance **transparency** polymaleimide manuf diene

IT Cycloalkadienes

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reactants for Diels-Alder reaction with unreacted maleimide; decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 109169-06-4P, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer

RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)

(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 31621-07-5P, Acrylonitrile-N-phenylmaleimide-styrene copolymer

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 77-73-6, Dicyclopentadiene 542-92-7, Cyclopentadiene, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 941-69-5, N-Phenylmaleimide

RL: RCT (Reactant); REM (Removal or disposal); PROC (Process); RACT (Reactant or reagent)  
(decrease of unreacted monomer contents of maleimide polymers using dienes)

IT 109169-06-4P, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer

RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)

(decrease of unreacted monomer contents of maleimide polymers using dienes)

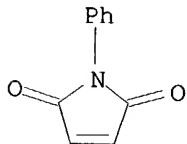
RN 109169-06-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with methyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

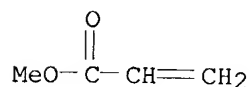
CRN 941-69-5

CMF C10 H7 N O2



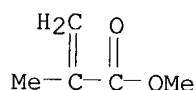
CM 2

CRN 96-33-3  
CMF C4 H6 O2



CM 3

CRN 80-62-6  
CMF C5 H8 O2



L29 ANSWER 8 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2000:137305 HCAPLUS  
DN 132:181049  
ED Entered STN: 29 Feb 2000  
TI Vinyl chloride-based graft copolymers with high **transparency** and  
good heat and impact resistance  
IN Toyokawa, Takuya; Ohmura, Takahiro; Hatakeyama, Hiroshi  
PA Sekisui Chemical Co. Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 13 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese  
IC ICM C08F265-06  
CC 35-7 (Chemistry of Synthetic High Polymers)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000063443	A2	20000229	JP 1998-235889	19980821
PRAI	JP 1998-235889		19980821		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000063443	ICM	C08F265-06

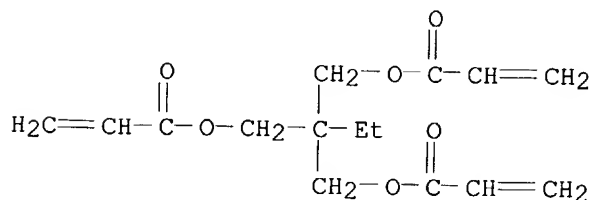
AB The copolymers are obtained by grafting vinyl chloride and N-substituted maleimides on (A) acrylic copolymer latex (average particle size 0.001-0.2  $\mu\text{m}$ ) composed of 100 parts mixts. of 30-95% (meth)acrylates (X) with Tg of their homopolymers  $\geq -140$  and  $< 30^\circ$  and 5-70% radically polymerizable monomers (Y) with refractive index of their homopolymers  $\geq 1.51$  and 0.1-30 parts polyfunctional monomers (Z), (B) acrylic graft copolymer latex (average particle size 0.0001-0.2  $\mu\text{m}$ ) of 5-70% acrylic copolymers of 100 parts Y and 0.1-30 parts Z with 30-95% mixts. of 100 parts X and 0.1-30 parts Z, or (C) acrylic graft copolymer latex (average particle size 0.0001-0.2  $\mu\text{m}$ ) of 30-95% copolymers of 100 parts X and 0.1-30 parts Z with 5-70% mixts. of 100 parts Y and 0.1-30 parts Z. Thus, 10% acrylic copolymer latex of styrene, Bu acrylate, 2-ethylhexyl acrylate, and trimethylolpropane triacrylate was graft polymerized with 80%

- vinyl chloride and 10% N-phenylmaleimide to give a graft copolymer with d.p. 981, visible light transmittance 77%, haze 14%, deflection temperature under load 92°, Charpy impact strength 93%, and tensile strength 469 kg/cm<sup>2</sup>.
- ST vinyl chloride maleimide acrylic graft copolymer; heat impact resistance vinyl chloride graft copolymer; **transparent** graft copolymer vinyl chloride acrylic
- IT Polymerization  
(graft; vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)
- IT Impact-resistant materials  
Impact-resistant materials  
(heat-resistant; vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)
- IT Heat-resistant materials  
Heat-resistant materials  
(impact-resistant; vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)
- IT **Transparent** materials  
(vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)
- IT 259527-58-7P, Butyl acrylate-2-ethylhexyl acrylate-N-phenylmaleimide-styrene-trimethylolpropane triacrylate-vinyl chloride graft copolymer  
259527-59-8P, Butyl acrylate-2-ethylhexyl acrylate-N-phenylmaleimide-trimethylolpropane triacrylate-vinyl chloride-vinylidene chloride graft copolymer 259527-60-1P, Acrylic acid-butyl acrylate-N-cyclohexylmaleimide-2-ethylhexyl acrylate-styrene-trimethylolpropane triacrylate-vinyl chloride graft copolymer  
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**  
(vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)
- IT 259527-59-8P, Butyl acrylate-2-ethylhexyl acrylate-N-phenylmaleimide-trimethylolpropane triacrylate-vinyl chloride-vinylidene chloride graft copolymer  
RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**  
(vinyl chloride-based graft copolymers with high **transparency** and good heat and impact resistance)
- RN 259527-59-8 HCAPLUS
- CN 2-Propenoic acid, 2-ethyl-2-[[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with butyl 2-propenoate, chloroethene, 1,1-dichloroethene, 2-ethylhexyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione, graft (9CI) (CA INDEX NAME)

CM 1

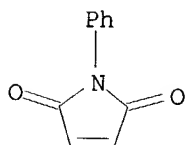
CRN 15625-89-5

CMF C15 H20 O6



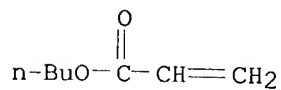
CM 2

CRN 941-69-5  
CMF C10 H7 N O2



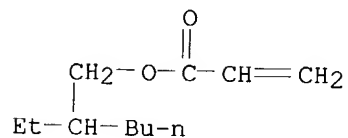
CM 3

CRN 141-32-2  
CMF C7 H12 O2



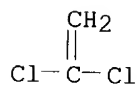
CM 4

CRN 103-11-7  
CMF C11 H20 O2



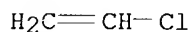
CM 5

CRN 75-35-4  
CMF C2 H2 Cl2



CM 6

CRN 75-01-4  
CMF C2 H3 Cl



- L29 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1997:327140 HCAPLUS  
 DN 127:5449  
 ED Entered STN: 23 May 1997  
 TI New reactive polyelectrolyte stabilizers for polyaniline colloids  
 AU Maeda, Shuichi; Cairns, Dean B.; Armes, Steven P.  
 CS Sch. Chem. and Mol. Sci., Univ. of Sussex, Brighton, BN1 9QJ, UK  
 SO European Polymer Journal (1997), 33(3), 245-254  
 CODEN: EUPJAG; ISSN: 0014-3057  
 PB Elsevier  
 DT Journal  
 LA English  
 CC 35-8 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 76  
 AB Polyaniline colloids were prepared using reactive steric stabilizers based on anionic poly(sodium styrene sulfonate) and cationic poly(2-(dimethylamino)ethyl methacrylate) copolymers. Both these polyelectrolyte stabilizers contain reactive co-monomers (either N-phenylmaleimide or 4-aminostyrene), which promote chemical grafting of the stabilizer onto the surface of the polyaniline particles. These polyaniline colloids were characterized in terms of their chemical composition, particle size, morphol. and conductivity by various techniques, including elemental microanalyses, IR spectroscopy, visible absorption spectroscopy, disk centrifuge photosedimentometry, TEM, and d.c. conductivity. The colloidal polyaniline dispersions were developed to improve processability of the conducting polymers.  
 ST polystyrenesulfonate steric stabilizer polyaniline colloid;  
 polymethacrylate cationic stabilizer polyaniline conducting polymer  
 IT Polymer morphology  
 (dispersed particle; preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)  
 IT Colloids  
 Electric conductivity  
 Optical absorption  
 Particle size  
 Polyelectrolytes  
 Stabilizing agents  
 (preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)  
 IT Conducting polymers  
 Polyanilines  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)  
 IT 124296-58-8P, 2-(Dimethylamino)ethyl methacrylate-N-phenylmaleimide copolymer 190206-71-4P, 4-Aminostyrene-2-sulfo-1-dimethylethylacrylamide copolymer 190206-72-5P, 4-Aminostyrene-sodium 4-styrenesulfonate copolymer 190206-73-6P, 4-Aminostyrene-2-sulfoethylmethacrylate copolymer 190206-74-7P, 4-Aminostyrene-4-styrenecarboxylic acid copolymer 190206-75-8P, 2-(Dimethylamino)ethyl methacrylate-4-aminostyrene copolymer 190206-76-9P, N-Phenylmaleimide-2-sulfo-1-dimethylethylacrylamide copolymer 190206-77-0P, N-Phenylmaleimide-sodium 4-styrenesulfonate copolymer 190206-78-1P, N-Phenylmaleimide-2-sulfoethylmethacrylate copolymer 190206-79-2P, N-Phenylmaleimide-4-

styrenecarboxylic acid copolymer

RL: MOA (Modifier or additive use); **SPN (Synthetic preparation);**

**PREP (Preparation);** USES (Uses)

(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)

IT 25233-30-1P, Polyaniline

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

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- (2) Armes, S; Langmuir 1990, V6, P1745 HCAPLUS
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- (18) Liu, C; Polym J 1993, V4, P363
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- (21) Maeda, S; J Mater Chem 1994, V4(6), P935 HCAPLUS
- (22) Markham, G; Colloids Surf 1990, V51, P239 HCAPLUS
- (23) McManus, P; J Chem Soc, Chem Commun 1985, P1556 HCAPLUS
- (24) Milton, A; Synth Met 1993, V57(1), P3571 HCAPLUS
- (25) Munstedt, H; Polymer 1988, V29, P296
- (26) Stejskal, J; Polym Commun 1992, V33(22), P4857 HCAPLUS
- (27) Stejskal, J; Synth Met 1993, V61, P225 HCAPLUS
- (28) Tadros, P; J Mater Chem 1992, V2, P125 HCAPLUS
- (29) Vincent, B; J Chem Soc, Chem Commun 1990, P683 HCAPLUS

IT 190206-76-9P, N-Phenylmaleimide-2-sulfo-1-dimethylethylacrylamide copolymer

RL: MOA (Modifier or additive use); **SPN (Synthetic preparation);**

**PREP (Preparation);** USES (Uses)

(preparation of reactive polyelectrolyte stabilizers and of polyaniline colloids and morphol. and conductivity of dispersions)

RN 190206-76-9 HCAPLUS

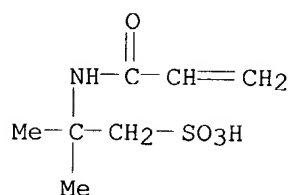
CN 1-Propanesulfonic acid, 2-methyl-2-[(1-oxo-2-propenyl)amino]-, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

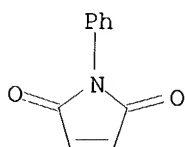
CRN 15214-89-8

CMF C7 H13 N O4 S





CM 2

 CRN 941-69-5  
 CMF C10 H7 N O2


L29 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1996:241759 HCAPLUS  
 DN 124:319770  
 ED Entered STN: 25 Apr 1996  
 TI Thermosetting resin compositions for protective films for color filters  
 IN Uruno, Michio; Kobayashi, Akihiro; Kotani, Masahiro  
 PA Hitachi Chemical Co Ltd, Japan  
 SO Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C08L033-06  
 ICS C08F220-32; C08F222-38; C09D133-06; G02B005-20; G02F001-1335  
 CC 42-7 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 37, 38  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08027348	A2	19960130	JP 1994-167609	19940720
PRAI	JP 1994-167609		19940720		

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 08027348	ICM	C08L033-06
	ICS	C08F220-32; C08F222-38; C09D133-06; G02B005-20; G02F001-1335

AB Title compns. with good water, chemical, solvent, heat, and light resistance, contain copolymers of 10-40% (meth)acrylates having C7-20 alicyclic groups containing tertiary C bonded with esters and 60-90% glycidyl (meth)acrylates and copolymers of N-substituted maleimides and (meth)acrylic acids. Thus, 60:140 tricyclo[5.2.1.0]decan-8-yl methacrylate-glycidyl methacrylate copolymer 100, 120:40:40 N-phenylmaleimide-methacrylic acid-Me methacrylate copolymer 110, trimellitic anhydride 6.7, and silane coupling agents 2.0 parts were mixed at room temperature, coated on a glass plate, and

heated at 160° for 1 h to give a test piece showing cross-cut  
adhesion 100/100 (JIS K 5400) and light **transparency**  
≥95%.

ST thermosetting resin protective coating color filter; **transparency**  
glycidyl methacrylate copolymer coating; water resistance coating acrylate  
polymer; cyclodecanyl methacrylate copolymer coating; maleimide phenyl  
copolymer coating; methacrylate copolymer coating color filter

IT Plastics

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM  
(Technical or engineered material use); PROC (Process); USES (Uses)  
(water-resistant thermosetting resin coatings containing glycidyl  
(meth)acrylate copolymers and maleimide copolymers for protection of  
color filters)

IT Coating materials

(**transparent**, water-resistant thermosetting resin coatings  
containing glycidyl (meth)acrylate copolymers and maleimide copolymers for  
protection of color filters)

IT 147814-52-6P, Glycidyl methacrylate-tricyclo[5.2.1.0<sup>2,6</sup>]decan-8-yl  
methacrylate copolymer 148802-82-8P, Methacrylic acid-N-phenylmaleimide-  
tricyclo[5.2.1.0<sup>2,6</sup>]decan-8-yl methacrylate copolymer 162303-68-6P,  
Glycidyl methacrylate-norbornyl methacrylate copolymer 171063-32-4P,  
N-Cyclohexylmaleimide-methacrylic acid-methyl methacrylate copolymer  
172920-09-1P, Glycidyl methacrylate-isobornyl methacrylate copolymer  
174803-47-5P, Bornyl methacrylate-glycidyl methacrylate copolymer  
**176372-75-1P**, Ethyl acrylate-methacrylic acid-N-phenylmaleimide  
copolymer

RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or  
chemical process); PRP (Properties); TEM (Technical or engineered material  
use); **PREP (Preparation)**; PROC (Process); USES (Uses)  
(water-resistant thermosetting resin coatings containing glycidyl  
(meth)acrylate copolymers and maleimide copolymers for protection of  
color filters)

IT **176372-75-1P**, Ethyl acrylate-methacrylic acid-N-phenylmaleimide  
copolymer

RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or  
chemical process); PRP (Properties); TEM (Technical or engineered material  
use); **PREP (Preparation)**; PROC (Process); USES (Uses)  
(water-resistant thermosetting resin coatings containing glycidyl  
(meth)acrylate copolymers and maleimide copolymers for protection of  
color filters)

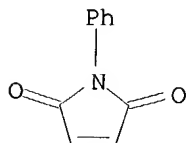
RN 176372-75-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with ethyl 2-propenoate and  
1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

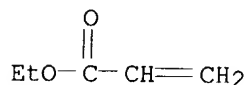
CRN 941-69-5

CMF C10 H7 N O2



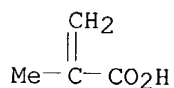
CM 2

CRN 140-88-5  
CMF C5 H8 O2



CM 3

CRN 79-41-4  
CMF C4 H6 O2



L29 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1995:994300 HCAPLUS  
DN 124:30717  
ED Entered STN: 22 Dec 1995  
TI Copolymers of unsaturated imides and alkenyl isocyanates and their derivatives for use as nonlinear **optical** materials  
IN Beckmann, Stefan; Zentel, Rudolf; Doerr, Michael; Eich, Manfred  
PA BASF A.-G., Germany  
SO Eur. Pat. Appl., 20 pp.  
CODEN: EPXXDW  
DT Patent  
LA German  
IC ICM C08F222-40  
ICS C08F226-02; C09K019-38; C08F008-00; G02F001-35  
CC 35-10 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 37

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 671421	A1	19950913	EP 1995-103026	19950303
	EP 671421	B1	19970521		
	R: DE, FR, GB, IT				
	DE 4408199	A1	19950914	DE 1994-4408199	19940311
	US 5502135	A	19960326	US 1995-401612	19950309
	JP 07258354	A2	19951009	JP 1995-51541	19950310
PRAI	DE 1994-4408199	A	19940311		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 671421	ICM	C08F222-40
	ICS	C08F226-02; C09K019-38; C08F008-00; G02F001-35
US 5502135	ECLA	C08F008/00; C08F008/00; C08F008/30; C08F008/30; C08F222/40; C08F226/02;

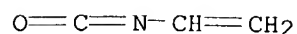
AB Vinyl isocyanate is copolymd. with a maleimide derivative such as N-phenyl-, N-butyl-, or N-(diphenylmethyl)maleimide, and the resulting isocyanate group-containing copolymers are reacted with a hydroxy-containing chromophore such

- as HOCH<sub>2</sub>CH<sub>2</sub>NetZN:NZNO<sub>2</sub>, HOCH<sub>2</sub>CH<sub>2</sub>OZZNO<sub>2</sub>, or HOCH<sub>2</sub>CH<sub>2</sub>OZNO<sub>2</sub> (Z = p-phenylene) to prepare derivs. for use as nonlinear **optical** materials.
- ST vinyl isocyanate copolymer deriv nonlinear **optical**; maleimide isocyanatoethene copolymer deriv nonlinear **optical**; nitrobenzene deriv polymer nonlinear **optical**; nitroazobenzene deriv polymer nonlinear **optical**; azobenzene deriv polymer nonlinear **optical**; polymn isocyanatoethene maleimide deriv
- IT Azo compounds  
Imides  
Nitro compounds  
Urethane polymers, preparation  
Urethanes  
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)  
(preparation of maleimide-vinyl isocyanate copolymer derivs. for use as nonlinear **optical** materials)
- IT **Optical materials**  
(nonlinear, preparation of maleimide-vinyl isocyanate copolymer derivs. as)
- IT 159624-83-6P, N-Butylmaleimide-vinyl isocyanate alternating copolymer  
159624-84-7P, N-(Diphenylmethyl)maleimide-vinyl isocyanate alternating copolymer **159624-85-8P**, N-Phenylmaleimide-vinyl isocyanate alternating copolymer 171771-13-4P, N-(1-Naphthyl)maleimide-vinyl isocyanate alternating copolymer 171771-14-5P, N-(1-Adamantyl)maleimide-vinyl isocyanate alternating copolymer 171771-15-6P, N-(9-Fluorenyl)maleimide-vinyl isocyanate alternating copolymer  
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)  
(preparation and reaction with hydroxy-containing chromophores)
- IT 2872-52-8DP, 1-[N-Ethyl-N-(2-hydroxyethyl)amino]-4-(4-nitrophenylazo)benzene, reaction products with N-substituted maleimide-vinyl isocyanate copolymers 16365-27-8DP, reaction products with N-substituted maleimide-vinyl isocyanate copolymers 123390-59-0DP, reaction products with N-substituted maleimide-vinyl isocyanate copolymers 159624-83-6DP, reaction products with hydroxyalkyl group-containing chromophores 159624-84-7DP, reaction products with hydroxyalkyl group-containing chromophores **159624-85-8DP**, reaction products with hydroxy-containing chromophores 171771-13-4DP, reaction products with hydroxyalkyl group-containing chromophores 171771-14-5DP, reaction products with hydroxyalkyl group-containing chromophores 171771-15-6DP, reaction products with hydroxyalkyl group-containing chromophores  
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); PRP (Properties); **PREP (Preparation)**; USES (Uses)  
(preparation and use as nonlinear **optical** materials)
- IT **159624-85-8P**, N-Phenylmaleimide-vinyl isocyanate alternating copolymer  
RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)  
(preparation and reaction with hydroxy-containing chromophores)
- RN 159624-85-8 HCAPLUS
- CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene, alternating (9CI) (CA INDEX NAME)

CM 1

CRN 3555-94-0

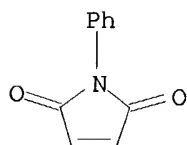
CMF C3 H3 N O



CM 2

CRN 941-69-5

CMF C10 H7 N O2



IT 159624-85-8DP, reaction products with hydroxy-containing chromophores  
 RL: **IMF (Industrial manufacture)**; NUU (Other use, unclassified);  
 PRP (Properties); **PREP (Preparation)**; USES (Uses)  
 (preparation and use as nonlinear **optical** materials)

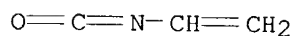
RN 159624-85-8 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene,  
 alternating (9CI) (CA INDEX NAME)

CM 1

CRN 3555-94-0

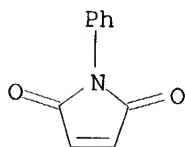
CMF C3 H3 N O



CM 2

CRN 941-69-5

CMF C10 H7 N O2



L29 ANSWER 12 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1995:838910 HCAPLUS

DN 123:316421

ED Entered STN: 07 Oct 1995

TI Optical devices composed of heat-resistant methyl methacrylate-N-  
 arylmaleimide copolymers

IN Nakai, Yoshio; Sato, Fumio

PA Mitsubishi Rayon Co, Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08F220-14

ICS C08F222-40; G02B001-04; G11B007-24

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07179527	A2	19950718	JP 1994-258160	19941024
	JP 2778917	B2	19980723		
PRAI	JP 1994-258160		19941024		

CLASS

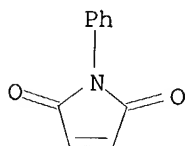
PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 07179527	ICM	C08F220-14
	ICS	C08F222-40; G02B001-04; G11B007-24

- AB The title devices with improved heat resistance and transparency comprise heat-resistant copolymers with intrinsic viscosity 0.3-1.0 dL/g in chloroform at 25° composed of 70-99% Me methacrylate (I) units and 1-30% N-arylmaleimide (II) units where residual I contents are ≤1.0% and residual II contents are ≤0.3%. Thus, 1800 g a solution containing I 80, N-(2-chlorophenyl)maleimide 20, octyl mercaptan 0.23, and AIBN 0.1 part was added to water containing 0.54 g poly(2-sodiumsulfoethyl methacrylate) and 9 g Na2SO4, suspension polymerized at 80°, and dried to give polymer beads, 100 parts of which was added to 500 parts MeOH, heated at 40°, filtered, dried, and extrusion molded at 250° to give transparent pellets with intrinsic viscosity 0.53 dL/g. A pressure-molded test piece showed notched Izod impact strength 1.2 kg-cm/cm, heat distortion temperature 120°, and Vicat softening temperature 137°. A lens molded from the pellets at 250° showed refractive index 1.517, dispersion vD 47.8, and Izod impact strength 1.2 kg-cm/cm.
- ST optical lens methacrylic resin transparency; arylmaleimide copolymer optical lens; heat resistance PMMA arylmaleimide lens; impact resistance PMMA arylmaleimide lens
- IT Polyimides, uses  
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (arylmaleimide-based; heat- and impact-resistant transparent optical lenses composed of Me methacrylate-N-arylmaleimide copolymers)
- IT Lenses  
 (heat- and impact-resistant transparent optical lenses composed of Me methacrylate-N-arylmaleimide copolymers)
- IT **32554-23-7P**, Methyl methacrylate-N-phenylmaleimide copolymer  
**38807-39-5P**, N-(2-Chlorophenyl)maleimide-methyl methacrylate copolymer  
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (heat- and impact-resistant **transparent optical** lenses composed of Me methacrylate-N-arylmaleimide copolymers)
- IT **32554-23-7P**, Methyl methacrylate-N-phenylmaleimide copolymer  
**38807-39-5P**, N-(2-Chlorophenyl)maleimide-methyl methacrylate copolymer  
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (heat- and impact-resistant **transparent optical** lenses composed of Me methacrylate-N-arylmaleimide copolymers)

RN 32554-23-7 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

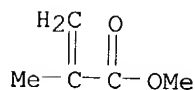
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CRN 941-69-5  
CMF C10 H7 N O2



CM 2

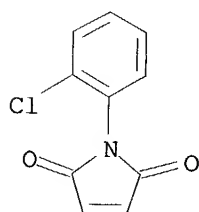
CRN 80-62-6  
CMF C5 H8 O2



RN 38807-39-5 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
1-(2-chlorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

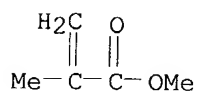
CM 1

CRN 1203-24-3  
CMF C10 H6 Cl N O2



CM 2

CRN 80-62-6  
CMF C5 H8 O2



L29 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1995:808278 HCAPLUS  
 DN 123:270881  
 ED Entered STN: 23 Sep 1995  
 TI **Optical** recording medium with methacrylate copolymer  
 IN Hasegawa, Hideki; Kojima, Yumiko; Masuda, Seiji; Sasaki, Shigeaki; Tono, Kanako  
 PA Mitsubishi Rayon Co, Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G11B007-24  
 ICS G11B007-24; B41M005-26  
 CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 37, 38  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07153114	A2	19950616	JP 1993-295575	19931125
PRAI	JP 1993-295575		19931125		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 07153114	ICM	G11B007-24
	ICS	G11B007-24; B41M005-26

AB A substrate, which consists of a copolymer of specific viscosity of 0.3-1.0 dL/g in CHCl<sub>3</sub> at 25° formed by polymerization of monomer mixture containing ≤65 mol% methacrylate ester, acrylate ester, and 10-40 weight% maleimide, is coated with an inorg. thin film by sputtering to obtain the **optical** medium. The medium shows good forming property of the substrate and improved adhesion with sputtering-formed recording or reflecting film.

ST **optical** recording medium methacrylate ester copolymer; sputtering inorg film **optical** recording; maleimide methacrylate acrylate copolymer **optical** recording

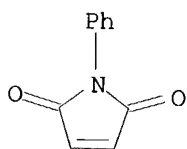
IT Recording materials  
 (**optical**, **optical** recording medium with methacrylate copolymer substrate)

IT **109169-06-4P**, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer 113812-43-4P, N-Cyclohexylmaleimide-methyl acrylate-methyl methacrylate copolymer 169121-89-5P, Cyclohexyl acrylate-N-cyclohexylmaleimide-methyl acrylate-methyl methacrylate copolymer  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)  
 (**optical** recording medium with methacrylate copolymer substrate)

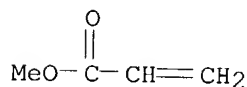
IT 7429-90-5, Aluminum, uses 7631-86-9, Silicon dioxide, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (sputtering film, recording layer; **optical** recording medium)



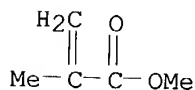
with methacrylate copolymer substrate)  
 IT 109169-06-4P, Methyl acrylate-methyl methacrylate-N-phenylmaleimide copolymer  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)  
 (optical recording medium with methacrylate copolymer substrate)  
 RN 109169-06-4 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with methyl 2-propenoate and 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 941-69-5  
 CMF C10 H7 N O2



CM 2  
 CRN 96-33-3  
 CMF C4 H6 O2



CM 3  
 CRN 80-62-6  
 CMF C5 H8 O2



L29 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1995:792803 HCAPLUS  
 DN 123:170610  
 ED Entered STN: 15 Sep 1995  
 TI Maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mechanical strength, and workability  
 IN Mori, Hiroshi; Ii, Yasuaki; Yokohama, Hisaya; Tsuneshige, Yasunori; Fujii, Seizou; Nakazato, Takanori  
 PA Mitsubishi Rayon Co., Ltd., Japan

SO PCT Int. Appl., 67 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 IC ICM C08F212-04  
 ICS C08F222-40; C08L025-00; C08L035-00; C08L051-04  
 CC 35-4 (Chemistry of Synthetic High Polymers)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9518837	A1	19950713	WO 1995-JP13	19950110
	W: AU, CN, KR, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 07206938	A2	19950808	JP 1994-989	19940110
	JP 3297180	B2	20020702		
	JP 07268153	A2	19951017	JP 1994-65147	19940401
	JP 3428130	B2	20030722		
	JP 08048840	A2	19960220	JP 1994-201545	19940804
	JP 3422847	B2	20030630		
	AU 9513920	A1	19950801	AU 1995-13920	19950110
	AU 683128	B2	19971030		
	EP 688798	A1	19951227	EP 1995-905236	19950110
	EP 688798	B1	19990818		
	EP 688798	B2	20030827		
	R: DE, FR, GB, IT				
	CN 1122141	A	19960508	CN 1995-190019	19950110
	CN 1081196	B	20020320		
	JP 08073701	A2	19960319	JP 1995-161580	19950606
	JP 2999944	B2	20000117		
	US 5948879	A	19990907	US 1997-957588	19971024
PRAI	JP 1994-989	A	19940110		
	JP 1994-65147	A	19940401		
	JP 1994-170358	A	19940630		
	JP 1994-201545	A	19940804		
	WO 1995-JP13	W	19950110		

## CLASS

	PATENT NO.	CLASS.	PATENT FAMILY CLASSIFICATION CODES
	WO 9518837	ICM	C08F212-04
		ICS	C08F222-40; C08L025-00; C08L035-00; C08L051-04
AB	A maleimide copolymer comprises maleimide monomer units, aromatic vinyl monomer units and other vinyl monomer units (residual maleimide content ≤0.1%, volatiles other than maleimide ≤0.5%, the content of a compound obtained from at least one monomer selected from the group consisting of a maleimide monomer, aromatic vinyl monomers and other vinyl monomers and having a Mw 200-1,000 as determined by gel permeation chromatog. 2-10%, the copolymer yellowness index ≤30, and the copolymer intrinsic viscosity 0.3 to 1.5), and a maleimide resin composition comprises the above copolymer and a rubbery graft polymer. A copolymer of 70% N-phenylmaleimide, 24% styrene, and 6% acrylonitrile with intrinsic viscosity 0.68 dL/g, yellowness index 25, Vicat softening temperature 137°, and spiral flow length 28 cm was prepared and blended 70:30 with ABS graft copolymer.		
ST	maleimide copolymer heat resistant; moldable maleimide copolymer		
IT	Plastics		
	RL: POF (Polymer in formulation); PRP (Properties); USES (Uses) (maleimide copolymer and resin composition containing the same with good <b>transparency</b> , heat resistance, mech. strength, and workability)		
IT	106677-58-1P, ABS graft copolymer 110083-38-0P, Acrylonitrile-allyl		

methacrylate-butadiene-butyl acrylate-methacrylic acid-styrene graft copolymer

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)

(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

IT 31621-07-5P, Acrylonitrile-N-phenylmaleimide-styrene copolymer

88077-73-0P, Acrylonitrile-N-phenylmaleimide copolymer

RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)

(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

IT 9003-54-7, Acrylonitrile-styrene copolymer 118915-68-7

RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)

(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

IT 88077-73-0P, Acrylonitrile-N-phenylmaleimide copolymer

RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)

(maleimide copolymer and resin composition containing the same with good **transparency**, heat resistance, mech. strength, and workability)

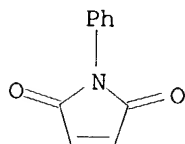
RN 88077-73-0 HCAPLUS

CN 2-Propenenitrile, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

CMF C10 H7 N O2



CM 2

CRN 107-13-1

CMF C3 H3 N



L29 ANSWER 15 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1995:234423 HCAPLUS

DN 122:240564

ED Entered STN: 08 Dec 1994

TI Polymers with nonlinear **optical** properties and high glass transition temperatures by functionalization of reactive precursors

AU Dorr, Michael; Zentel, Rudolf

CS Inst. Organische Chemie, Univ. Mainz, Mainz, D-55099, Germany

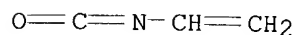
SO Macromolecular Rapid Communications (1994), 15(12), 935-42

CODEN: MRCOE3; ISSN: 1022-1336

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

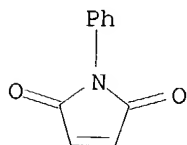
PB Huethig & Wepf  
 DT Journal  
 LA English  
 CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 73  
 AB Radical copolymn. of vinyl isocyanate with N-substituted maleimides, i.e., N-butylmaleimide, N-(diphenylmethyl)maleimide, and N-phenylmaleimide, in toluene at 70° using 2,2'-azoisobutyronitrile as the initiator gave alternating copolymers that were functionalized by reaction with alcs., i.e., EtOH or MeOH, and then C.I. Disperse Red 1. The degree of functionalization was strongly determined by the solubility of the precursor polymer. The high glass transition temps. of the polymers and the stability of their nonlinear **optical** properties indicate that these polymers have potential for use in **optical** devices.  
 ST vinyl isocyanate nonlinear **optical** copolymer; maleimide deriv nonlinear **optical** copolymer; nonlinear **optical** polymer  
 IT prepn property; radical polymn vinyl isocyanate maleimide  
 IT **Optical** nonlinear property  
 (of maleimide derivative-vinyl isocyanate copolymers functionalized with C.I. Disperse Red 1)  
 IT Dielectric relaxation  
 (of poled maleimide derivative-vinyl isocyanate copolymers functionalized with C.I. Disperse Red 1)  
 IT Polymerization  
 (radical, of maleimide derivs. with vinyl isocyanate in nonlinear **optical** polymer preparation)  
 IT 159624-84-7P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (polymers with nonlinear **optical** properties and high glass transition temps. by functionalization of reactive precursors)  
 IT 64-17-5DP, Ethanol, reaction products with maleimide derivative-vinyl isocyanate copolymers 67-56-1DP, Methanol, reaction products with maleimide derivative-vinyl isocyanate copolymers 2872-52-8DP, C.I. Disperse Red 1, reaction products with maleimide derivative-vinyl isocyanate copolymers 159624-83-6DP, reaction products with C.I. Disperse Red 1 and methanol 159624-84-7DP, reaction products with C.I. Disperse Red 1 and methanol 159624-85-8DP, reaction products with C.I. Disperse Red 1 and methanol  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (polymers with nonlinear **optical** properties and high glass transition temps. by functionalization of reactive precursors)  
 IT 159624-83-6P 159624-85-8P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and functionalization of via polymer-analogous reactions with alkyl alcs. and nonlinear **optical** chromophores)  
 IT 159624-85-8DP, reaction products with C.I. Disperse Red 1 and methanol  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (polymers with nonlinear **optical** properties and high glass transition temps. by functionalization of reactive precursors)  
 RN 159624-85-8 HCAPLUS  
 CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene, alternating (9CI) (CA INDEX NAME)  
 CM 1

CRN 3555-94-0  
CMF C3 H3 N O



CM 2

CRN 941-69-5  
CMF C10 H7 N O2



IT 159624-85-8P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)  
; PREP (Preparation); RACT (Reactant or reagent)

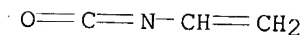
(preparation and functionalization of via polymer-analogous reactions with  
alkyl alcs. and nonlinear optical chromophores)

RN 159624-85-8 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with isocyanatoethene,  
alternating (9CI) (CA INDEX NAME)

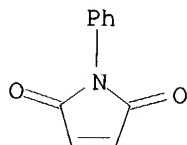
CM 1

CRN 3555-94-0  
CMF C3 H3 N O



CM 2

CRN 941-69-5  
CMF C10 H7 N O2



L29 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1993:627195 HCAPLUS  
DN 119:227195  
ED Entered STN: 27 Nov 1993

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

TI Maleimide-olefin copolymers and optical materials  
 IN Yukioka, Satoshi; Tamai, Yoshinori; Ishikawa, Noryuki  
 PA Tosoh Corp, Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM C08F222-40  
 ICS C08F210-00

CC 37-5 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 38

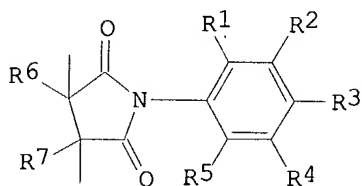
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 05117334	A2	19930514	JP 1991-303911	19911024
PRAI JP 1991-303911		19911024		

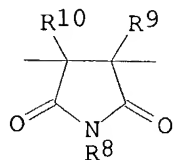
CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 05117334	ICM	C08F222-40
	ICS	C08F210-00

GI



I



II

AB The title copolymers with weight-average mol. weight 1000-5,000,000 comprise N-phenylmaleimide units I (R1-R7 = H, halo, CO2H, C1-8 alkyl), N-alkylmaleimide units II (R8-R10 = H, halo, CO2H, C1-8 alkyl), and 2-70 mol %  $\alpha$ -olefin units CHR13CR11R12 (R11-13 = H, C1-6 alkyl). The copolymers have good transparency and heat resistance and low birefringence. A 1:1 (mol) N-(2,6-diethylphenyl)maleimide-isobutene copolymer showed light transmittance 92%, refractive index 1.550, and glass temperature 204°.

ST maleimide olefin copolymer optical material; transparency maleimide olefin copolymer; heat resistance maleimide olefin copolymer; refractive index maleimide olefin copolymer; isobutene maleimide copolymer optical material; phenylmaleimide isobutene copolymer optical material; birefringence redn isobutene maleimide copolymer; diethylphenylmaleimide isobutene copolymer optical material

IT Birefringence

(maleimide derivative-olefin copolymers with low, for optical materials)

IT Transparent materials

(maleimide derivative-olefin copolymers, with low birefringence)

IT Refractive index and Optical refraction

(of maleimide derivative-olefin copolymers, with low birefringence)

IT 30523-66-1 30523-68-3 150570-57-3

150940-15-1 150940-16-2

RL: PRP (Properties)

(transparent, heat-resistant, for optical materials  
 with low birefringence)

IT 30523-66-1 30523-68-3 150570-57-3  
150940-15-1 150940-16-2

RL: PRP (Properties)

(transparent, heat-resistant, for optical materials  
with low birefringence)

RN 30523-66-1 HCAPLUS

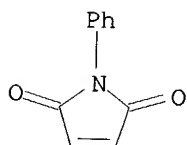
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 2-methyl-1-propene (9CI)  
(CA INDEX NAME)

CM 1

CRN 941-69-5

CMF C10 H7 N O2

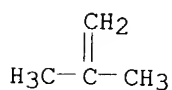
X



CM 2

CRN 115-11-7

CMF C4 H8



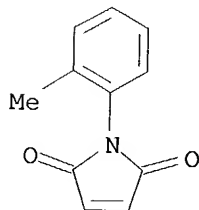
RN 30523-68-3 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene  
(9CI) (CA INDEX NAME)

CM 1

CRN 4067-01-0

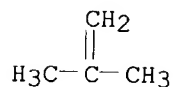
CMF C11 H9 N O2



CM 2

CRN 115-11-7

CMF C4 H8

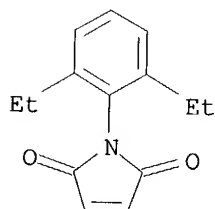


RN 150570-57-3 HCAPLUS  
 CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with  
 2-methyl-1-propene and 1-methyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX  
 NAME)

CM 1

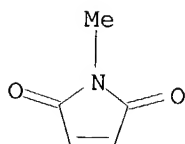
CRN 38167-72-5  
 CMF C14 H15 N O2

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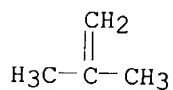
CM 2

CRN 930-88-1  
 CMF C5 H5 N O2



CM 3

CRN 115-11-7  
 CMF C4 H8

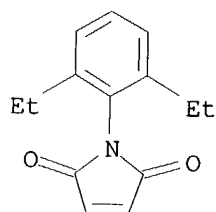


RN 150940-15-1 HCAPLUS  
 CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with  
 2-methyl-1-propene (9CI) (CA INDEX NAME)

CM 1

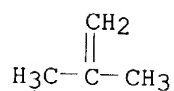


CRN 38167-72-5  
CMF C14 H15 N O2



CM 2

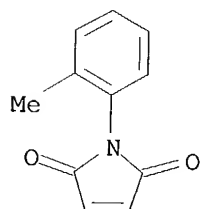
CRN 115-11-7  
CMF C4 H8



RN 150940-16-2 HCAPLUS  
CN 1H-Pyrrole-2,5-dione, 1-methyl-, polymer with 1-(2-methylphenyl)-1H-pyrrole-2,5-dione and 2-methyl-1-propene (9CI) (CA INDEX NAME)

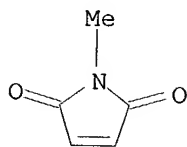
CM 1

CRN 4067-01-0  
CMF C11 H9 N O2



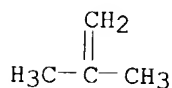
CM 2

CRN 930-88-1  
CMF C5 H5 N O2



CM 3

CRN 115-11-7  
CMF C4 H8



L29 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1993:582171 HCAPLUS  
DN 119:182171  
ED Entered STN: 30 Oct 1993  
TI Glass-filled N-phenylmaleimide-olefin polymers with excellent  
**transparency** and their uses as automotive parts  
IN Yukioka, Satoshi; Doi, Tooru  
PA Tosoh Corp, Japan  
SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM C08L023-02  
ICS C08K003-40; C08K007-14; C08L035-00  
CC 37-6 (Plastics Manufacture and Processing)  
Section cross-reference(s): 38

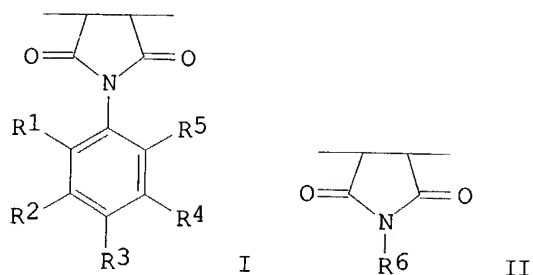
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05140375	A2	19930608	JP 1991-329690	19911120
	JP 3208810	B2	20010917		
PRAI	JP 1991-329690		19911120		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 05140375	ICM	C08L023-02
	ICS	C08K003-40; C08K007-14; C08L035-00

GI

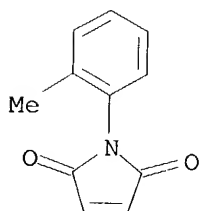


- AB Heat- and impact-resistant title compns. with difference of refractive index (RI) of the glass fillers and that of the polymers  $\leq 0.01$  comprise (A) 30-99% polymers [polystyrene-based weight-average mol. weight (Mw) 1 + 103 to 5 + 106] composed of 30-98 mol% N-phenylmaleimide derivative units I (R1-5 = H, C1-6 alkyl, C1-6 alkoxy, halo) and N-alkylmaleimide units II (R6 = C1-18 alkyl, C3-12 cycloalkyl) at I/II ratio 100/0-1/99, 2-70 mol% units CHR7CR8R9 (R7-9 = H, C1-8 alkyl), and 0-40 mol% other comonomer units and (B) 1-70% glass fillers and are used for automotive parts. Thus, treating 2000 g N-(2,6-diethylphenyl)maleimide, 1110 g N-methylmaleimide, and 8 L isobutene at 60° for 8 h in PhMe in the presence of AIBN gave a polymer (Mw 240,000, RI 1.543), 1.4 kg of which was blended with 0.6 kg aminosilane-treated glass filler (RI 1.540), pelletized, and injection molded to give a test piece showing light transmittance 88%, heat distortion temperature 175°, linear expansion coefficient  $3.0 \times 10^{-5}$  cm/cm-°C, bending strength 1200 kg/cm<sup>2</sup>, and impact strength 4 kg-cm/cm.
- ST ethylphenylmaleimide methylmaleimide isobutene polymer **transparency**; heat resistance phenylmaleimide olefin polymer; impact resistance maleimide polymer; dimensional stability maleimide polymer; glass filler maleimide polymer **transparency**; automobile part maleimide polymer
- IT Glass fibers, uses  
RL: USES (Uses)  
(fillers, for N-phenylmaleimide polymers, with good **transparency** and heat and impact resistance)
- IT Heat-resistant materials  
Impact-resistant materials  
**Transparent** materials  
(glass-filled N-phenylmaleimide polymers as)
- IT Automobiles  
(parts, glass-filled N-phenylmaleimide polymers for, with good **transparency** and heat and impact resistance)
- IT Alkenes, polymers  
RL: USES (Uses)  
(polymers, with N-phenylmaleimides, glass-filled, with good **transparency** and heat and impact resistance)
- IT 30523-68-3P 150570-57-3P  
RL: PREP (Preparation)  
(preparation of, glass-filled, with good **transparency** and heat and impact resistance, for automotive parts)
- IT 30523-68-3P  
RL: PREP (Preparation)  
(preparation of, glass-filled, with good **transparency** and heat and

impact resistance, for automotive parts)  
 RN 30523-68-3 HCAPLUS  
 CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene  
 (9CI) (CA INDEX NAME)

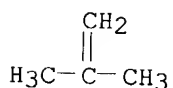
CM 1

CRN 4067-01-0  
 CMF C11 H9 N O2



CM 2

CRN 115-11-7  
 CMF C4 H8



L29 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1991:165116 HCAPLUS  
 DN 114:165116  
 ED Entered STN: 03 May 1991  
 TI Heat-resistant **transparent** vinyl chloride copolymers  
 IN Fujii, Noriki; Shibasaki, Yukio; Kato, Masaharu  
 PA Sekisui Chemical Co. Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM C08F214-06  
 ICS C08F002-44

CC 35-4 (Chemistry of Synthetic High Polymers)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 02229812	A2	19900912	JP 1989-51247	19890302
PRAI JP 1989-51247		19890302		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 02229812	ICM	C08F214-06
	ICS	C08F002-44

AB The title copolymers are prepared by polymerizing vinyl chloride (I), and

optionally comonomers, with N-arylmaleimides which are added stepwise, and, after copolymn., adding antioxidants in the presence of I. Thus, suspension polymerization of 3.6 kg I with addition of forty 26.8-g portions of N-phenylmaleimide (II) at 5-min intervals and adding 18 g BHT with the remaining I gave a 70:30 I-II copolymer which, when compounded, had bending temperature 105°, yellowness index 30, and light transmittance 93%; vs. 78, 150, and 35, resp., when II was added in a single portion.

ST vinyl chloride copolymer heat resistance; maleimide deriv copolymer; phenylmaleimide copolymer vinyl chloride; polymn suspension chloroethene arylmaleimide

IT Antioxidants

(for vinyl chloride-arylmaleimide copolymers, addition of, in polymerization)

IT Polymerization

(suspension, of vinyl chloride with arylmaleimides, with stepwise addition of imides)

IT 123-28-4, Dilaurylthiodipropionate 128-37-0, 2,6-Di-tert-butyl-p-cresol, uses and miscellaneous 135-88-6, Phenyl-β-naphthylamine

RL: USES (Uses)

(antioxidants, for vinyl chloride-arylmaleimide copolymers)

IT 27903-37-3P, N-Phenylmaleimide-vinyl chloride copolymer

35641-19-1P, N-o-Chlorophenylmaleimide-vinyl chloride copolymer

35641-20-4P 131577-69-0P

RL: PREP (Preparation)

(preparation of heat-resistant and transparent)

IT 27903-37-3P, N-Phenylmaleimide-vinyl chloride copolymer

35641-19-1P, N-o-Chlorophenylmaleimide-vinyl chloride copolymer

131577-69-0P

RL: PREP (Preparation)

(preparation of heat-resistant and transparent)

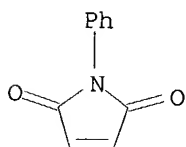
RN 27903-37-3 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

CMF C10 H7 N O2



CM 2

CRN 75-01-4

CMF C2 H3 Cl

H<sub>2</sub>C=CH-Cl

RN 35641-19-1 HCAPLUS

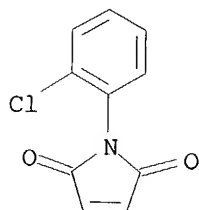
CN 1H-Pyrrole-2,5-dione, 1-(2-chlorophenyl)-, polymer with chloroethene (9CI)

(CA INDEX NAME)

CM 1

CRN 1203-24-3

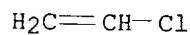
CMF C10 H6 Cl N O2



CM 2

CRN 75-01-4

CMF C2 H3 Cl



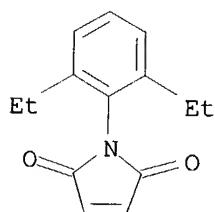
RN 131577-69-0 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with chloroethene  
(9Cl) (CA INDEX NAME)

CM 1

CRN 38167-72-5

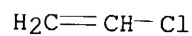
CMF C14 H15 N O2



CM 2

CRN 75-01-4

CMF C2 H3 Cl



L29 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1991:44208 HCAPLUS  
DN 114:44208  
ED Entered STN: 09 Feb 1991  
TI Preparation of heat-resistant vinyl chloride copolymers  
IN Fujii, Noriki; Shibasaki, Yukio; Kato, Masaharu  
PA Sekisui Chemical Co. Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese  
IC ICM C08F214-06  
ICS C08F006-10  
CC 37-3 (Plastics Manufacture and Processing)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 02229811	A2	19900912	JP 1989-51246	19890302
PRAI	JP 1989-51246		19890302		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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JP 02229811	ICM	C08F214-06
	ICS	C08F006-10

AB The title polymers having good **transparency** are prepared by polymerization of vinyl chloride (I) with arylmaleimides which are proportionally or continuously added to I, and extracting the polymers with organic solvents. Thus, heating a mixture of saponified poly(vinyl alc.) 7.2, tert-Bu peroxyneodecanoate 14.4, and I 3600 g in 12 L H<sub>2</sub>O to 50°, adding 26.8 g N-phenylmaleimide in 41.5 g acetone for 40 times at a 5 min interval, polymerizing, extracting the resulting polymers with 1:4 THF-MeOH mixture gave a polymer having softening temperature 107°, yellowing index 20, and **transparency** 93%.

ST vinyl chloride maleimide copolymer; phenylmaleimide vinyl chloride copolymer; **transparency** vinyl chloride polymer prepn; heat resistance vinyl chloride copolymer

IT 27903-37-3P, N-Phenylmaleimide-vinyl chloride copolymer  
35641-19-1P, N-o-Chlorophenylmaleimide-vinyl chloride copolymer  
131577-69-0P

RL: PREP (Preparation)

(preparation of, **transparent**, heat-resistant)

IT 27903-37-3P, N-Phenylmaleimide-vinyl chloride copolymer  
35641-19-1P, N-o-Chlorophenylmaleimide-vinyl chloride copolymer  
131577-69-0P

RL: PREP (Preparation)

(preparation of, **transparent**, heat-resistant)

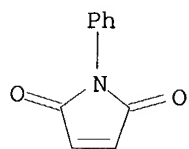
RN 27903-37-3 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

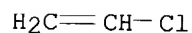
CRN 941-69-5

CMF C10 H7 N O2



CM 2

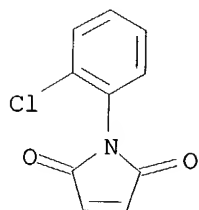
CRN 75-01-4  
CMF C2 H3 Cl



RN 35641-19-1 HCAPLUS  
CN 1H-Pyrrole-2,5-dione, 1-(2-chlorophenyl)-, polymer with chloroethene (9CI)  
(CA INDEX NAME)

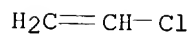
CM 1

CRN 1203-24-3  
CMF C10 H6 Cl N O2



CM 2

CRN 75-01-4  
CMF C2 H3 Cl

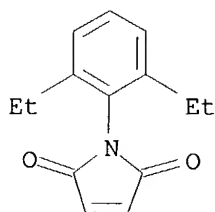


RN 131577-69-0 HCAPLUS  
CN 1H-Pyrrole-2,5-dione, 1-(2,6-diethylphenyl)-, polymer with chloroethene  
(9CI) (CA INDEX NAME)

CM 1

CRN 38167-72-5  
CMF C14 H15 N O2





CM 2

CRN 75-01-4  
CMF C2 H3 C1 $\text{H}_2\text{C}=\text{CH}-\text{Cl}$ 

L29 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1990:613250 HCAPLUS  
 DN 113:213250  
 ED Entered STN: 08 Dec 1990  
 TI Manufacture of resins for optical applications  
 IN Okinaka, Takaaki; Sugawara, Seizo; Kawai, Hiromasa; Kanega, Fumiaki  
 PA Hitachi Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM C08F220-14  
 ICS C08F002-18; G02B001-04  
 ICA C08F222-40; G11B007-24  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 38, 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 02175711	A2	19900709	JP 1989-230184	19890905
	US 5155190	A	19921013	US 1991-707280	19910528
PRAI	JP 1988-222696		19880906		
	US 1989-403387		19890906		

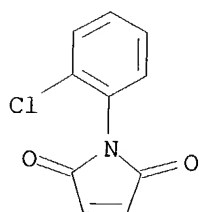
CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 02175711	ICM	C08F220-14
	ICS	C08F002-18; G02B001-04
	ICA	C08F222-40; G11B007-24

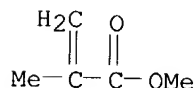
AB Polymers, useful for manufacture of lenses and optical disk substrates, are prepared from Me methacrylate (I) 50-97, N-substituted maleimides 3-30, and vinyl monomers 0-40%. Thus, a polymer [prepared by suspension polymerization of 800 parts I and 200 parts N-(o-chlorophenyl)maleimide] molding had transparency 91%, and heat distortion temperature 91°, vs. 92.2 and 95, resp., for poly(Me methacrylate).

ST methacrylate chlorophenyl maleimide copolymer; optical disk methacrylate

copolymer; lens methacrylate copolymer  
 IT Lenses  
 (maleimide derivative-Me methacrylate copolymers for, heat-resistant)  
 IT Recording apparatus  
 (optical disks, maleimide derivative-Me methacrylate copolymers for, heat-resistant)  
 IT **38807-39-5P**, N-(o-Chlorophenyl) maleimide-methylmethacrylate copolymer 105469-99-6P, N-Cyclohexyl maleimide-methyl methacrylate copolymer 105899-24-9P, Cyclohexyl methacrylate-N-ethyl maleimide-methyl methacrylate copolymer 111575-20-3P, N-tert-Butyl maleimide-methyl methacrylate copolymer 130401-09-1P, N-Ethyl maleimide-norbornyl methacrylate-methyl methacrylate copolymer 130401-10-4P, N-Ethyl maleimide-methyl methacrylate-tricyclo[5,2,1,0<sup>2,6</sup>]deca-8-yl methacrylate copolymer  
 RL: PREP (Preparation)  
 (preparation of **transparent** heat-resistant, for **optical** disks and lenses)  
 IT **38807-39-5P**, N-(o-Chlorophenyl) maleimide-methylmethacrylate copolymer  
 RL: PREP (Preparation)  
 (preparation of **transparent** heat-resistant, for **optical** disks and lenses)  
 RN 38807-39-5 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 1203-24-3  
 CMF C10 H6 Cl N O2



CM 2  
 CRN 80-62-6  
 CMF C5 H8 O2



L29 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1989:534959 HCAPLUS  
 DN 111:134959  
 ED Entered STN: 14 Oct 1989

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

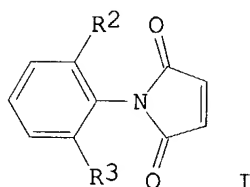
TI Preparation of heat-resistant and transparent polymers with excellent optical properties  
 IN Hayashi, Nobuyuki; Maeda, Tetsuo  
 PA Denki Kagaku Kogyo K. K., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C08F220-12  
 ICS C08F220-12; C08F222-40  
 CC 35-4 (Chemistry of Synthetic High Polymers)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01014219	A2	19890118	JP 1987-169716	19870709
	JP 07096582	B4	19951018		
PRAI	JP 1987-169716		19870709		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 01014219	ICM	C08F220-12
	ICS	C08F220-12; C08F222-40

OS MARPAT 111:134959  
 GI

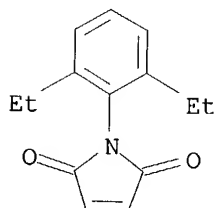


AB Polymers showing very slight yellowness on molding, useful for optic materials such as lenses, disks, and fibers, are prepared by copolymerizing 30-95% CH<sub>2</sub>:CMeCO<sub>2</sub>R<sub>1</sub> (R<sub>1</sub> = C<sub>2</sub>≥1 alkyl) with 1-60% I (R<sub>2</sub>, R<sub>3</sub> = C<sub>2</sub>≥2 alkyl) and 0-60% copolymerizable monomers. Thus, Me methacrylate (II) 30, N-(2,6-diethylphenyl)maleimide (III) 15, cyclohexanone (IV) 50, and AIBN 0.1 part were stirred at 80° for 3 h under N and a mixture of II 55, IV 60, and AIBN 0.5 part was continuously added over 5 h, and further stirred at 110° for 3 h to obtain a viscous copolymer (conversion II 99.0 and III 98.50%) solution, which was fed to the opening of a screw extruder at 240° and ≤700 mm Hg with removal of IV to obtain pelletized III-II copolymer (V, containing 0.07% III and 0.02% IV as impurities), showing glass transition temperature 121° vs. 118° for similarly prepared pelletized 85:15 II-N-phenylmaleimide (VI) copolymer (VII, containing 0.05% VI and 0.03% IV as impurities). The injection molded plates from V showed heat distortion temperature 108°, refractive index 1.513, Abbe number 53, total light transmittance 91%, haze 1.4% optical path difference 12 nm, and yellowness 0.8, compared with 106, 1.508, 44, 87, 2.7, 21, and 38.5, resp. for controls from VII.

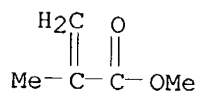
ST heat resistance transparent copolymer; ethylphenylmaleimide methyl methacrylate copolymer

IT Transparent materials  
 (methacrylate-dialkylphenylmaleimide copolymers, heat-resistant, with

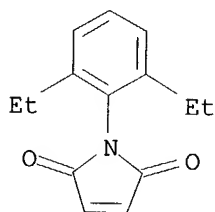
good optical properties)  
 IT Heat-resistant materials  
 (methacrylate-dialkylphenylmaleimide copolymers, transparent, with good optical properties)  
 IT **117955-60-9P 117955-63-2P**  
 RL: PREP (Preparation)  
 (preparation of, heat-resistant and **transparent**, with good optical properties)  
 IT **117955-60-9P 117955-63-2P**  
 RL: PREP (Preparation)  
 (preparation of, heat-resistant and **transparent**, with good optical properties)  
 RN 117955-60-9 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 38167-72-5  
 CMF C14 H15 N O2



CM 2  
 CRN 80-62-6  
 CMF C5 H8 O2

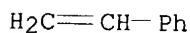


RN 117955-63-2 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione and ethenylbenzene (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 38167-72-5  
 CMF C14 H15 N O2



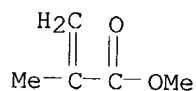
CM 2

CRN 100-42-5  
CMF C8 H8



CM 3

CRN 80-62-6  
CMF C5 H8 O2



L29 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1989:408385 HCAPLUS  
DN 111:8385  
ED Entered STN: 08 Jul 1989  
TI Heat-resistant transparent copolymers of methyl methacrylate and  
(dialkylphenyl)maleimides as optical materials  
IN Suzuki, Yutaka  
PA Ihara Chemical Industry Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 4 pp.  
CODEN: JKXXAF

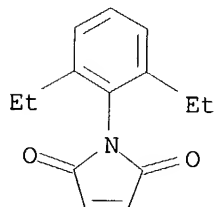
DT Patent  
LA Japanese  
IC ICM C08F220-14  
ICA C08F222-40; G02B001-04; G11B007-24  
ICI C08F220-14, C08F222-40  
CC 37-6 (Plastics Manufacture and Processing)  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63234009	A2	19880929	JP 1987-267551	19871022
PRAI JP 1986-255415		19861027		

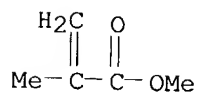
CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 63234009	ICM	C08F220-14

ICA C08F222-40; G02B001-04; G11B007-24  
 ICI C08F220-14, C08F222-40  
 OS MARPAT 111:8385  
 AB The title polymers are prepared from Me methacrylate (I) 55-98, N-(2,6-dialkylphenyl)maleimides 2-45, and other vinyl monomers 0-40 parts. A mixture of I 90, N-(2,6-diethylphenyl)maleimide 10, and azobisisobutyronitrile 0.5 part was polymerized between glass plates at 75° for 6 h and 95° for 2 h to give a colorless transparent resin having high heat-distortion temperature and light transmittance and low birefringence.  
 ST methacrylate methyl dialkylphenylmaleimide copolymer; maleimide dialkylphenyl methacrylate copolymer; phenylmaleimide dialkyl methacrylate copolymer; transparency methacrylate dialkylphenylmaleimide copolymer; optical material methacrylate copolymer  
 IT Transparent materials  
 IT (Me methacrylate-(dialkylphenyl)maleimide copolymers, preparation of)  
 IT Polymerization  
 IT (of Me methacrylate with (dialkylphenyl)maleimides, for optical materials)  
 IT 117955-60-9P 117955-61-0P 117955-62-1P  
 117955-63-2P 117955-64-3P  
 RL: PREP (Preparation)  
 IT (preparation of **transparent**, for **optical** materials)  
 IT 117955-60-9P 117955-61-0P 117955-62-1P  
 117955-63-2P 117955-64-3P  
 RL: PREP (Preparation)  
 IT (preparation of **transparent**, for **optical** materials)  
 RN 117955-60-9 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 38167-72-5  
 CMF C14 H15 N O2



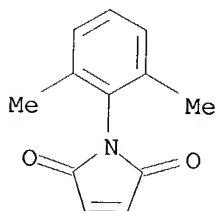
CM 2  
 CRN 80-62-6  
 CMF C5 H8 O2



RN 117955-61-0 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
 1-(2,6-dimethylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

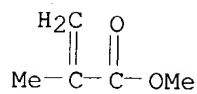
CM 1

CRN 1206-49-1  
 CMF C12 H11 N O2



CM 2

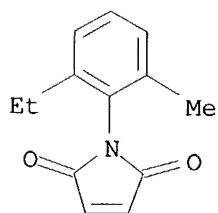
CRN 80-62-6  
 CMF C5 H8 O2



RN 117955-62-1 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
 1-(2-ethyl-6-methylphenyl)-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

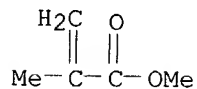
CM 1

CRN 56746-13-5  
 CMF C13 H13 N O2



CM 2

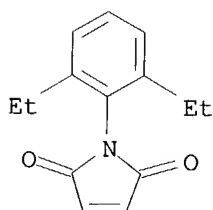
CRN 80-62-6  
 CMF C5 H8 O2



RN 117955-63-2 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione and ethenylbenzene (9CI) (CA  
 INDEX NAME)

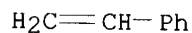
CM 1

CRN 38167-72-5  
 CMF C14 H15 N O2



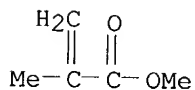
CM 2

CRN 100-42-5  
 CMF C8 H8



CM 3

CRN 80-62-6  
 CMF C5 H8 O2

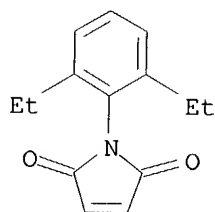


RN 117955-64-3 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
 1-(2,6-diethylphenyl)-1H-pyrrole-2,5-dione and (1-methylethenyl)benzene  
 (9CI) (CA INDEX NAME)

CM 1

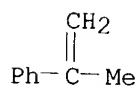
CRN 38167-72-5  
 CMF C14 H15 N O2





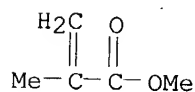
CM 2

CRN 98-83-9  
CMF C9 H10



CM 3

CRN 80-62-6  
CMF C5 H8 O2



L29 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1989:126942 HCAPLUS  
DN 110:126942  
ED Entered STN: 03 Apr 1989  
TI Electrically conductive heat-resistant vinyl chloride-maleimide copolymer compositions  
IN Sakamoto, Kazuo; Oda, Tatsuro  
PA Sekisui Chemical Co. Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM C08L027-06  
ICS C08K003-24  
CC 76-2 (Electric Phenomena)  
Section cross-reference(s): 35, 37, 38

FAN.CNT 1

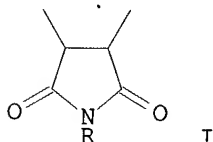
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63235353	A2	19880930	JP 1987-69386	19870324
PRAI	JP 1987-69386		19870324		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

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 JP 63235353 ICM C08L027-06  
 ICS C08K003-24  
 GI



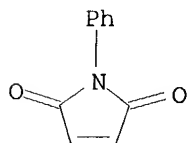
- AB The compns. comprise heat-resistant copolymers containing vinyl chloride units and N-substituted maleimide units I [R = (substituted) C1-30 aliphatic, alicyclic, or aromatic hydrocarbon group], and metal salts. Thus, 0.45 kg N-cyclohexylmaleimide and 4.0 kg vinyl chloride were suspension-polymerized in 14 L deionized water containing 10 g saponified poly(vinyl alc.) and 10 g tert-Bu peroxyneodecanoate at 50° for 8 h to give 3.8 kg polymer (II) with average d.p. 1190 and vinyl chloride content 87.5%. A 20% solution of II in a 3:1 THF-cyclohexanone mixture was mixed with 0.15 g LiClO<sub>4</sub> per 50 g solution, cast on a glass plate, dried at room temperature for 24 h and at 50° for 48 h under reduced pressure to give a 100-μm-thick film which showed surface resistance 7.8 + 10<sup>10</sup> Ω, volume resistivity 0.7 + 10<sup>12</sup> Ω-cm, good **transparency**, and no bleeding, vs. 1.5 + 10<sup>15</sup> Ω, 3.5 + 10<sup>15</sup> Ω-cm, poor **transparency**, and bleeding, resp., for a control containing vinyl chloride homopolymer (average d.p. 1380) in place of II.
- ST vinyl chloride polymer elec. conductive; maleimide vinyl chloride copolymer conductive; **transparent** vinyl chloride maleimide copolymer; antistatic vinyl chloride maleimide copolymer; metal salt conductive vinyl copolymer
- IT **Transparent materials**  
 (N-substituted maleimide-vinyl chloride copolymers containing metal salts, elec. conductive, heat-resistant, manufacture of)
- IT Heat-resistant materials  
 (N-substituted maleimide-vinyl chloride copolymers containing metal salts, elec. conductive, **transparent**, manufacture of)
- IT Electric conductors  
 (N-substituted maleimide-vinyl chloride copolymers containing metal salts, heat-resistant, **transparent**, manufacture of)
- IT 27903-37-3P, N-Phenylmaleimide-vinyl chloride copolymer  
 28210-06-2P, N-Cyclohexylmaleimide-vinyl chloride copolymer  
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
 (elec. conductive, heat-resistant, **transparent**, containing metal salts, manufacture of)
- IT 540-72-7, Sodium thiocyanate 7791-03-9, Lithium perchlorate  
 RL: PRP (Properties)  
 (vinyl chloride-maleimide copolymers containing, elec. conductive, heat-resistant, **transparent**)
- IT 27903-37-3P, N-Phenylmaleimide-vinyl chloride copolymer  
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
 (elec. conductive, heat-resistant, **transparent**, containing metal salts, manufacture of)
- RN 27903-37-3 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with chloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

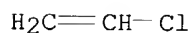
CMF C10 H7 N O2



CM 2

CRN 75-01-4

CMF C2 H3 Cl



- L29 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1987:177614 HCAPLUS  
 DN 106:177614  
 ED Entered STN: 29 May 1987  
 TI Mold for fabricating elements from transparent allyl polymers  
 AU Smirnov, V. I.; Alekseev, N. N.; Nikiforenko, V. S.; Bagdasaryan, K. V.; Kochikyan, A. V.  
 CS USSR  
 SO Optiko-Mekhanicheskaya Promyshlennost (1987), (1), 36-7  
 CODEN: OPMPAQ; ISSN: 0030-4042  
 DT Journal  
 LA Russian  
 CC 38-2 (Plastics Fabrication and Uses)  
 AB Transparent cubes were prepared from diethylene glycol diallyl carbonate (I) by polymerization and copolymn. in molds of stainless Steel 9Kh18 [12718-19-3].  
 The I polymers had good optical properties, impact toughness, and abrasive, chemical, radiation, and heat resistance. The quality of cubes from I polymers was not inferior to that of thermoplastic materials, e.g., poly(Me methacrylate) obtained by injection molding.  
 ST polyallyl polycarbonate polyoxyethylene reaction molding; transparent polyallyl stainless steel mold  
 IT Transparent materials  
 (polyallyl-polycarbonate-polyoxyethylenes, reaction molding of, stainless steel molds for, optical properties in relation to)  
 IT Polycarbonates, uses and miscellaneous  
 RL: USES (Uses)  
 (polyallyl-polyoxyethylene-, reaction molding of transparent, stainless steel molds for)  
 IT Molding apparatus for plastics and rubbers  
 (molds, stainless steel, for transparent diethylene glycol bisallylcarbonate polymers)

IT 25656-90-0 31530-29-7, Diethylene glycol bisallylcarbonatemethyl methacrylate copolymer **108144-80-5**  
 RL: USES (Uses)  
 (molding of **transparent**, reaction, stainless steel molds for, **optical** properties in relation to)

IT 12718-19-3  
 RL: USES (Uses)  
 (molds, for reaction molding of transparent polyallyl-polycarbonate-polyoxyethylenes)

IT **108144-80-5**  
 RL: USES (Uses)  
 (molding of **transparent**, reaction, stainless steel molds for, **optical** properties in relation to)

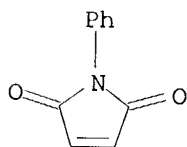
RN 108144-80-5 HCAPLUS

CN 2,5,8,10-Tetraoxatridec-12-enoic acid, 9-oxo-, 2-propenyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

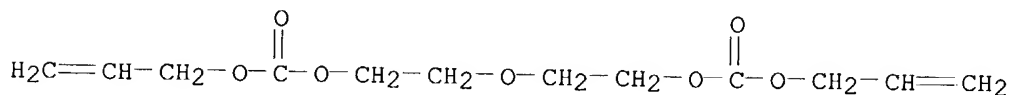
CMF C10 H7 N O2



CM 2

CRN 142-22-3

CMF C12 H18 O7



L29 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1987:19624 HCAPLUS

DN 106:19624

ED Entered STN: 24 Jan 1987

TI Optical disk substrates

IN Tanaka, Masayuki; Yokoikawa, Takumi; Kishimoto, Akihiko

PA Toray Industries, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08F220-14

ICA G11B007-24

ICI C08F220-14, C08F222-40

CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 37, 74

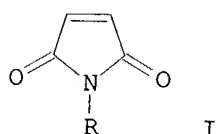
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61095011	A2	19860513	JP 1984-216331	19841017
PRAI	JP 1984-216331		19841017		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 61095011	ICM	C08F220-14
	ICA	G11B007-24
	ICI	C08F220-14, C08F222-40

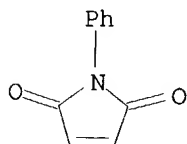
GI



- AB Optical disk substrates are composed of copolymers prepared by polymerizing mixts. of 55-98% Me methacrylate, 2-25% maleimides I [R = H, (substituted) C1-20 alkyl, aryl], and 0-40% vinyl monomers. The copolymers show good heat resistance and transparency and low birefringence. Thus, heating a mixture of CH<sub>2</sub>:CMeCO<sub>2</sub>Me 95, N-methylmaleimide 5, and AIBN 0.5 part at 75° for 6 h and then at 95° for 2 h gave a copolymer which showed heat distortion temperature 109°, light transmission 90%, birefringence 10 nm, and n 1.495.
- ST methacrylate maleimide copolymer optical disk; heat resistance optical disk substrate; transparency optical disk substrate; birefringence redn optical disk substrate
- IT Transparent materials  
(alkyl methacrylate-maleimide copolymers, heat-resistant, with low birefringence, for optical disk substrates)
- IT Recording apparatus  
(optical disks, alkyl methacrylate-maleimide copolymers as substrates for, heat-resistant, transparent, with low birefringence)
- IT Imides  
RL: USES (Uses)  
(unsatd., polymers with alkyl methacrylates, as substrates for optical disks)
- IT 27881-11-4, N-Methylmaleimide-methyl methacrylate copolymer 30642-90-1, N-Butylmaleimide-methyl methacrylate copolymer **32554-23-7**, Methyl methacrylate-N-phenylmaleimide copolymer 105188-60-1, N-tert-Butylmaleimide-methyl methacrylate-styrene copolymer 105188-61-2, N-Cyclohexylmaleimide-methyl methacrylate- $\alpha$ -methylstyrene copolymer  
RL: USES (Uses)  
(heat-resistant and **transparent**, as substrates for **optical** disks)
- IT **32554-23-7**, Methyl methacrylate-N-phenylmaleimide copolymer  
RL: USES (Uses)  
(heat-resistant and **transparent**, as substrates for **optical** disks)
- RN 32554-23-7 HCAPLUS
- CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-phenyl-1H-pyrrole-2,5-dione (9CI) (CA INDEX NAME)

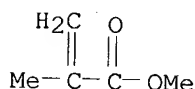
CM 1

CRN 941-69-5  
CMF C10 H7 N O2



CM 2

CRN 80-62-6  
CMF C5 H8 O2



L29 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1975:460408 HCAPLUS  
DN 83:60408  
ED Entered STN: 12 May 1984  
TI Acrylonitrile copolymers and articles made from them  
PA Imperial Chemical Industries Ltd., UK  
SO Neth. Appl., 22 pp. Division of Neth. Appl. 65 05,064 (CA 64;12835F).  
CODEN: NAXXAN  
DT Patent  
LA Dutch  
IC C08F  
CC 36-3 (Plastics Manufacture and Processing)  
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	NL 7407359	A	19740826	NL 1974-7359	19740531
	DE 1570789	A	19700102	DE 1965-J27935	19650415
	US 3652726	A	19720328	US 1968-729891	19680517
	US 3766142	A	19731016	US 1971-196743	19711108
PRAI	GB 1964-16502	A	19640421		
	GB 1964-45289	A	19641106		
	US 1965-447971	A	19650414		
	US 1966-537028	A2	19660323		
	GB 1967-23670	A	19670522		
	US 1968-729891	A2	19680517		
	US 1968-767481	A2	19681014		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
NL 7407359	IC	C08F

AB Acrylonitrile (I) copolymers with improved molding properties, processing temperature, and phys. properties were prepared by free radical polymerization from I

1-98, N-arylmaleimide 1-98, and olefin(s) 1-98 mole%. Thus, N-phenylmaleimide 20, I 40, and isobutylene 40 mole% were copolymd. in aqueous dispersion in the presence of a redox catalyst at 30° under pressure, giving a terpolymer [33408-59-2] with reduced viscosity 0.94 and melt viscosity 16 + 103 P, which remained relatively constant. The polymer was compression molded at 250° into a **transparent** amber plate with initial and final Vicat softening points 154 and 164° and bending strength 3.3 kg/cm2.

ST acrylonitrile copolymer molding; maleimide copolymer molding; isobutylene copolymer molding

IT 31621-07-5P **33408-59-2P 55884-94-1P**  
**55884-95-2P 55884-96-3P 55884-97-4P**

RL: **PREP (Preparation)**

(manufacture of, with improved molding properties)

IT **33408-59-2P 55884-94-1P 55884-95-2P**  
**55884-96-3P 55884-97-4P**

RL: **PREP (Preparation)**

(manufacture of, with improved molding properties)

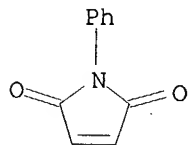
RN 33408-59-2 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 2-methyl-1-propene and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

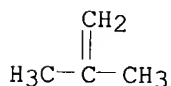
CMF C10 H7 N O2



CM 2

CRN 115-11-7

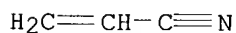
CMF C4 H8



CM 3

CRN 107-13-1

CMF C3 H3 N



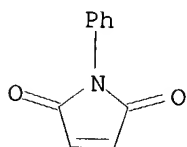
RN 55884-94-1 HCAPLUS

CN 2-Propenenitrile, polymer with 2-methyl-1-pentene and 1-phenyl-1H-pyrrole-

2,5-dione (9CI) (CA INDEX NAME)

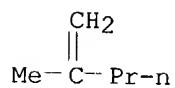
CM 1

CRN 941-69-5  
CMF C10 H7 N O2



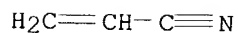
CM 2

CRN 763-29-1  
CMF C6 H12



CM 3

CRN 107-13-1  
CMF C3 H3 N

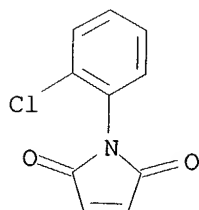


RN 55884-95-2 HCAPLUS

CN 2-Propenenitrile, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione and 2-methyl-1-propene (9CI) (CA INDEX NAME)

CM 1

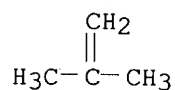
CRN 1203-24-3  
CMF C10 H6 Cl N O2



CM 2

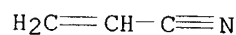


CRN 115-11-7  
CMF C4 H8



CM 3

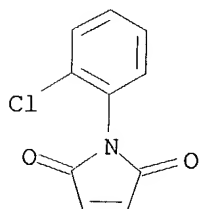
CRN 107-13-1  
CMF C3 H3 N



RN 55884-96-3 HCAPLUS  
CN 2-Propenenitrile, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione and 1-propene (9CI) (CA INDEX NAME)

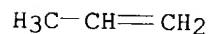
CM 1

CRN 1203-24-3  
CMF C10 H6 Cl N O2



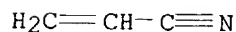
CM 2

CRN 115-07-1  
CMF C3 H6



CM 3

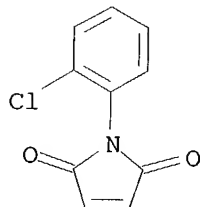
CRN 107-13-1  
CMF C3 H3 N



RN 55884-97-4 HCAPLUS  
 CN 2-Propenenitrile, polymer with 1-(2-chlorophenyl)-1H-pyrrole-2,5-dione and ethene (9CI) (CA INDEX NAME)

CM 1

CRN 1203-24-3  
 CMF C10 H6 Cl N O2



CM 2

CRN 107-13-1  
 CMF C3 H3 N



CM 3

CRN 74-85-1  
 CMF C2 H4



L29 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1967:422437 HCAPLUS  
 DN 67:22437  
 ED Entered STN: 12 May 1984  
 TI N-Substituted maleimide copolymers  
 IN Barr, Dennis A.; Nield, Eric; Rose, John Brewster  
 PA Imperial Chemical Industries Ltd.  
 SO Brit., 8 pp.  
 CODEN: BRXXAA  
 DT Patent  
 LA English  
 IC C08F  
 CC 36 (Plastics Manufacture and Processing)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	GB 1066715		19670426	GB	19621116

US 3352832 19670000 US  
 CLASS  
 PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

2

GB 1066715 IC C08F

AB N-Substituted maleimides were copolymd. with  $\geq 1$  ethylenically unsatd. monomer. Thus, N-phenylmaleimide 5.19, C<sub>6</sub>H<sub>6</sub> 4.4, isobutene 1.68, and azodiisobutyronitrile 0.05 part were charged to a reaction vessel which was purged with N, degassed, and sealed in vacuo. After 1 day at 60°, the seal was broken and the polymer was dissolved in CHCl<sub>3</sub> and repptd. by pouring into petroleum ether (b. 40-60°) to yield 5.9 parts copolymer with reduced viscosity 0.7 and Vicat softening point 221.5. The polymer was compression molded at 250-70° to give a **transparent** film which did not craze when immersed in boiling water for 120 min. The 2% water picked up was removed on drying. Similar copolymers were prepared with isobutene and N-(o-tolyl)maleimide or N-(o-chlorophenyl)maleimide. Copolymers and terpolymers were also prepared using ethylene, propylene, isobutene, 1-butene, 4-methyl-1-pentene, butadiene, Et acrylate, chloroprene, or styrene as monomer.

ST MALEIMIDES **TRANSPARENT** POLYMERS; POLYMERS MALEIMIDES **TRANSPARENT**

IT Plastics

RL: USES (Uses)

(from N-arylmaleimide polymers with olefins)

IT Olefins, preparation

RL: PREP (Preparation)

(polymers with N-arylmaleimide)

IT 941-69-5

RL: USES (Uses)

(polymers with olefins)

IT 26938-50-1P, preparation 30523-66-1P, preparation  
 30523-67-2P, preparation 30523-68-3P, preparation  
 30523-69-4P, preparation 30523-70-7P 30523-71-8P  
 30523-73-0P, preparation 30523-74-1P, preparation 30523-75-2P,  
 preparation 30523-76-3P, preparation 30523-77-4P,  
 preparation

RL: **PREP (Preparation)**

(preparation of)

IT 26938-50-1P, preparation 30523-66-1P, preparation  
 30523-67-2P, preparation 30523-68-3P, preparation  
 30523-69-4P, preparation 30523-70-7P 30523-71-8P  
 30523-73-0P, preparation 30523-76-3P, preparation  
 30523-77-4P, preparation

RL: **PREP (Preparation)**

(preparation of)

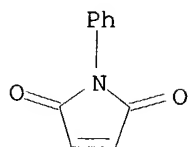
RN 26938-50-1 HCAPLUS

CN Maleimide, N-phenyl-, polymer with 1,3-butadiene (8CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

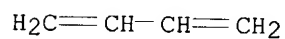
CMF C10 H7 N O2



CM 2

CRN 106-99-0

CMF C4 H6



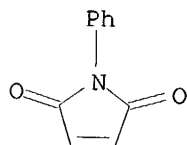
RN 30523-66-1 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 2-methyl-1-propene (9CI)  
(CA INDEX NAME)

CM 1

CRN 941-69-5

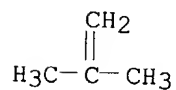
CMF C10 H7 N O2



CM 2

CRN 115-11-7

CMF C4 H8



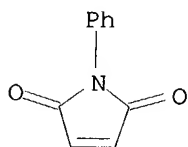
RN 30523-67-2 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 1-propene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

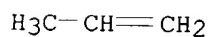
CMF C10 H7 N O2



CM 2

CRN 115-07-1

CMF C3 H6



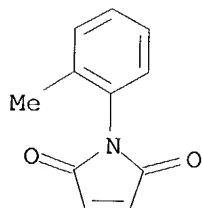
RN 30523-68-3 HCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 2-methyl-1-propene (9CI) (CA INDEX NAME)

CM 1

CRN 4067-01-0

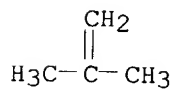
CMF C11 H9 N O2



CM 2

CRN 115-11-7

CMF C4 H8



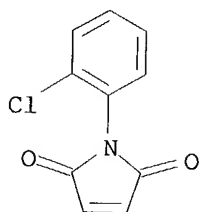
RN 30523-69-4 HCAPLUS

CN Maleimide, N-(o-chlorophenyl)-, polymer with 2-methylpropene (8CI) (CA INDEX NAME)

CM 1

CRN 1203-24-3

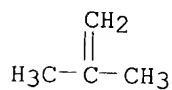
CMF C10 H6 Cl N O2



CM 2

CRN 115-11-7

CMF C4 H8



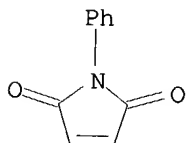
RN 30523-70-7 HCAPLUS

CN Maleimide, N-phenyl-, polymer with 4-methyl-1-pentene (8CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

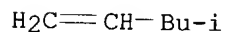
CMF C10 H7 N O2



CM 2

CRN 691-37-2

CMF C6 H12



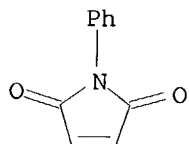
RN 30523-71-8 HCAPLUS

CN Maleimide, N-phenyl-, polymer with 1-butene (8CI) (CA INDEX NAME)

CM 1

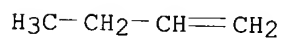
CRN 941-69-5

CMF C10 H7 N O2



CM 2

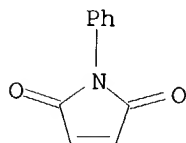
CRN 106-98-9  
CMF C4 H8



RN 30523-73-0 HCAPLUS  
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5  
CMF C10 H7 N O2



CM 2

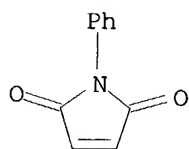
CRN 74-85-1  
CMF C2 H4



RN 30523-76-3 HCAPLUS  
CN Maleimide, N-phenyl-, polymer with 1,3-butadiene and 2-methylpropene (8CI) (CA INDEX NAME)

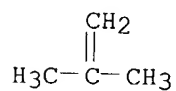
CM 1

CRN 941-69-5  
CMF C10 H7 N O2



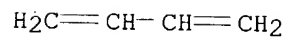
CM 2

CRN 115-11-7  
CMF C4 H8



CM 3

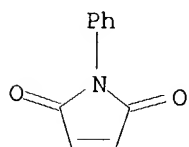
CRN 106-99-0  
CMF C4 H6



RN 30523-77-4 HCAPLUS  
CN Acrylic acid ethyl ester, polymer with 2-methylpropene and  
N-phenylmaleimide (8CI) (CA INDEX NAME)

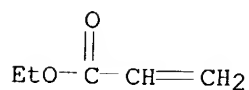
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CRN 941-69-5  
CMF C10 H7 N O2



CM 2

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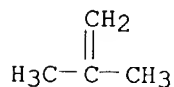




CM 3

CRN 115-11-7

CMF C4 H8



L29 ANSWER 28 OF 28 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1967:66054 HCAPLUS

DN 66:66054

ED Entered STN: 12 May 1984

TI Copolymers of N-substituted maleimides

IN Barr, Dennis A.; Nield, Eric; Rose, John Brewster

PA Imperial Chemical Industries Ltd.

SO Brit., 5 pp.

CODEN: BRXXAA

DT Patent

LA English

IC C08F

CC 35 (Synthetic High Polymers)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 1053860		19670104	GB	19621121

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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GB 1053860	IC	C08F
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AB N-Phenylmaleimide and some of its derivatives were copolymd. with vinyl ethers to give colorless products which were **transparent**, H<sub>2</sub>O-resistant, and stable at elevated temps. Thus, N-phenylmaleimide (I) 5.19, vinyl ethyl ether (II) 2.16, dry C<sub>6</sub>H<sub>6</sub> 8.97, and azodiisobutyronitrile 0.05 part were charged into a vessel that was purged with N, evacuated, and sealed. After 2 days at 60°, the polymer was dissolved in CHCl<sub>3</sub>, precipitated from warm petroleum ether, filtered, extracted with ether under reflux, and dried in vacuum to yield 6.6 parts copolymer with a reduced viscosity of 0.99 and a 10/10th Vicat Softening Point of 189°. The polymer, compression molded at 250° gave a **transparent** film that did not craze when immersed in boiling water for 2 hrs. Similarly prepared copolymers were (maleimide, vinyl ether, and yield given): I, vinyl iso-Bu ether, 6.3 parts; and N-(2-methylphenyl)maleimide, II, 6.9 parts.

ST MALEIMIDES COPOLYMERS; VINYL ETHERS COPOLYMERS; PHENYLMALEIMIDES COPOLYMERS; **TRANSPARENT** MALEIMIDE COPOLYMERS; FILMS MALEIMIDE COPOLYMERS

IT Polymerization  
(of N-phenylmaleimides with vinyl ethers)

IT 31606-69-6P 31606-70-9P 31626-90-1P

RL: PREP (Preparation)

(preparation of)

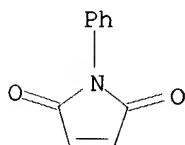
IT 31606-69-6P 31606-70-9P 31626-90-1P

RL: PREP (Preparation)

(preparation of)  
 RN 31606-69-6 HCAPLUS  
 CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with ethoxyethene (9CI) (CA INDEX NAME)

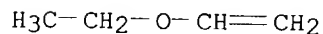
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CRN 941-69-5  
 CMF C10 H7 N O2



CM 2

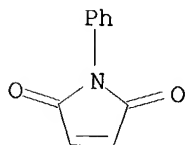
CRN 109-92-2  
 CMF C4 H8 O



RN 31606-70-9 HCAPLUS  
 CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 1-(ethenyloxy)-2-methylpropane (9CI) (CA INDEX NAME)

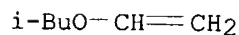
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CRN 941-69-5  
 CMF C10 H7 N O2



CM 2

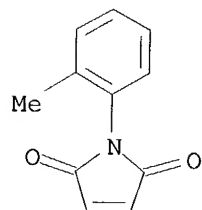
CRN 109-53-5  
 CMF C6 H12 O



RN 31626-90-1 HCAPLUS  
 CN Maleimide, N-o-tolyl-, polymer with ethyl vinyl ether (8CI) (CA INDEX NAME)

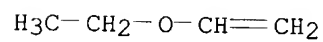
CM 1

CRN 4067-01-0  
CMF C11 H9 N O2



CM 2

CRN 109-92-2  
CMF C4 H8 O



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